Accuracy of Responses to a Hospital Patient Questionnaire Designed for Use in Administrative Decision Making

Barbara VanOss. Marin

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ACCURACY OF RESPONSES TO A HOSPITAL PATIENT QUESTIONNAIRE
DESIGNED FOR USE IN ADMINISTRATIVE DECISION MAKING

by
Barbara VanOss Marin

A Dissertation Submitted to the Faculty of the Graduate School
of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy

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1980
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VITA

The author, Barbara VanOss Marin, was born on October 14, 1949, the daughter of Jean C. (Michels) VanOss and Arnold G. VanOss. She completed high school at St. Joseph's Academy in Green Bay, Wisconsin in 1968.

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Marin, B. El proceso psicoterapeutico como aplicacion de los principios del aprendizaje (Psychotherapy as an application of learning principles). Revista Latinoamericana de Psicologia, 1974, 6, 59-64.


iii
Marin, B. Estereotipos em relação a papéis sexuais na Colômbia (Sex role stereotypes in Colombia). Cadernos de Pesquisa, 1975, 15, 3-7.


Marin, B. Use of consumer feedback in planned change and evaluation activities. Journal of Community Psychology, in press.

Posavac, E.J., Carey, R.G., & Marin, B. Listening to patients: How patient surveys can be used in hospital management. Hospitals, in press.
TABLE OF CONTENTS

| ACKNOWLEDGMENTS                        | ii   |
| VITA                                   | iii  |
| TABLE OF CONTENTS                     | v    |
| LIST OF TABLES                         | viii |
| CONTENTS OF APPENDIX                   | x    |

Chapter

I. INTRODUCTION ............................................. 1

II. REVIEW OF THE LITERATURE, PURPOSE, AND HYPOTHESES .... 3

Review of the Literature .................................... 3

Studies of Consumer Feedback Regarding Health Care . 3
Inadequate Utilization of Research by Planners and Administrators .................................. 3
Criteria Needed for Administrative Use of Patient Feedback ........................................... 6
Questions should assess concrete, manipulable aspects of care ........................................ 6
Data should be collected repeatedly or at least in more than one setting ......................... 10
Feedback should be easy to obtain and analyze .............................................................. 12
Information from patients should be reasonably free from error and unbiased .................. 17
Feedback should be sensitive to differing service delivery conditions .......................... 19
Feedback should be sensitive to change ............................................................................ 21
Purpose and Hypotheses ........................................ 24
Measurements of the Level of Error in Patient Responses ................................................. 26
Assessments of Sensitivity to Differences in Conditions .................................................. 27
Measurements of Sensitivity to Change ................................................................................ 29
Potential for change in patient responses ........................................................................... 30
Effects of hospital changes on patient responses ............................................................... 30
Summary of Areas to be Investigated and Hypotheses ...................................................... 32
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of error in patient responses</td>
<td>32</td>
</tr>
<tr>
<td>Sensitivity to differences in conditions</td>
<td>33</td>
</tr>
<tr>
<td>Sensitivity to change</td>
<td>34</td>
</tr>
</tbody>
</table>

### III. METHOD

<table>
<thead>
<tr>
<th>Subhead</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects</td>
<td>36</td>
</tr>
<tr>
<td>Development of the Instrument</td>
<td>37</td>
</tr>
<tr>
<td>Selection of departments to be evaluated</td>
<td>38</td>
</tr>
<tr>
<td>Definition of goals</td>
<td>39</td>
</tr>
<tr>
<td>Development of goal-related items</td>
<td>39</td>
</tr>
<tr>
<td>Development of an importance rating for each goal</td>
<td>40</td>
</tr>
<tr>
<td>Development of other items</td>
<td>40</td>
</tr>
<tr>
<td>Pretesting and Revisions of the Instrument</td>
<td>41</td>
</tr>
<tr>
<td>First Pretest</td>
<td>41</td>
</tr>
<tr>
<td>Revised version of the survey</td>
<td>41</td>
</tr>
<tr>
<td>Subsequent pretests</td>
<td>42</td>
</tr>
<tr>
<td>Final version</td>
<td>44</td>
</tr>
<tr>
<td>Procedure</td>
<td>44</td>
</tr>
</tbody>
</table>

### IV. RESULTS

<table>
<thead>
<tr>
<th>Subhead</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return rate</td>
<td>48</td>
</tr>
<tr>
<td>Level of error in patient responses</td>
<td>49</td>
</tr>
<tr>
<td>Error in responses regarding closed circuit television</td>
<td>49</td>
</tr>
<tr>
<td>Comparison of staff and patient reports of waiting time</td>
<td>51</td>
</tr>
<tr>
<td>Comparison of patient responses on questionnaire and during interview regarding knowledge and use of closed circuit television</td>
<td>56</td>
</tr>
<tr>
<td>Sensitivity to Differences in Conditions</td>
<td>58</td>
</tr>
<tr>
<td>Differences between patients admitted on high and low discharge days regarding assessments of housekeeping and food service</td>
<td>58</td>
</tr>
<tr>
<td>Differences in waiting time reported by patients admitted on different days</td>
<td>62</td>
</tr>
<tr>
<td>Differences in responses to food service items by patients on general and modified diets</td>
<td>62</td>
</tr>
<tr>
<td>Sensitivity to Change</td>
<td>64</td>
</tr>
<tr>
<td>Potential for change in patient responses</td>
<td>64</td>
</tr>
<tr>
<td>Change in responses regarding Primary Nursing following introduction of business cards</td>
<td>71</td>
</tr>
<tr>
<td>Change in waiting time responses after the addition of personnel in admitting</td>
<td>73</td>
</tr>
<tr>
<td>Change in patient satisfaction with admitting following a change in furniture arrangements</td>
<td>75</td>
</tr>
</tbody>
</table>
The effect of installing closed circuit television for patient education .......................... 75
Summary of Results ......................................................... 77
Return rate ................................................................. 77
Accuracy of questionnaire responses .................................. 77
Sensitivity of questionnaire responses to differences in hospital conditions ............ 79
Sensitivity of questionnaire responses to changes in hospital conditions .............. 79

V. DISCUSSION ................................................................. 81
Sources of Error ............................................................ 82
Reasons for Low Sensitivity to Change of Patient Responses .............................. 85
Practical Issues in Collecting Patient Feedback ........................................ 89
Possible Uses of the Patient Questionnaire Data ........................................ 93
Conclusion ................................................................. 95

SUMMARY ................................................................. 97
REFERENCE NOTES ......................................................... 100
REFERENCES ............................................................... 101
APPENDIX A ............................................................... 108
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. List of Health Care Programs and Published Studies in which Patient Feedback Has Been Assessed</td>
<td>4</td>
</tr>
<tr>
<td>2. Dates when Innovations Introduced and Samples Discharged</td>
<td>46</td>
</tr>
<tr>
<td>3. Number in Samples and Effective Response Rate for the Three Samples of Patients</td>
<td>50</td>
</tr>
<tr>
<td>4. Number and Percentage of Patients Responding Correctly or Incorrectly to the Question Regarding Knowledge of the Closed Circuit Television System</td>
<td>52</td>
</tr>
<tr>
<td>5. Number and Percentage of Patients Responding Correctly or Incorrectly to the Question Regarding Use of the Closed Circuit Television System</td>
<td>53</td>
</tr>
<tr>
<td>6. Number and Percentage of Patients in Each Time Category as Reported by Staff and Patients</td>
<td>55</td>
</tr>
<tr>
<td>7. Number and Percentage of Patients Responding &quot;Yes&quot; to Questions on Knowledge and Use of Closed Circuit Television for Two Samples</td>
<td>57</td>
</tr>
<tr>
<td>8. Percentage of Respondents Indicating Satisfaction with Housekeeping and Number Admitted on High and Low Discharge Days</td>
<td>60</td>
</tr>
<tr>
<td>9. Percentage of Respondents Indicating Satisfaction with Food Service and Number Admitted on High and Low Discharge Days</td>
<td>61</td>
</tr>
<tr>
<td>10. Reported Waiting Time for Patients Admitted on Sundays and Other Days</td>
<td>63</td>
</tr>
<tr>
<td>11. Numbers and Percentage of Patients Responding Most Favorably to Food Service Items Contrasting General with Modified Diets</td>
<td>65</td>
</tr>
<tr>
<td>12. Percentage of Patients Responding &quot;Excellent&quot; Regarding Hospital Services in the Three Samples</td>
<td>67</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>13. Percentage of Patients Responding Most Favorably Regarding Food Service in the Three Samples</td>
<td>68</td>
</tr>
<tr>
<td>14. Percentage of Patients Responding Most Favorably Regarding Nursing in the Three Samples</td>
<td>69</td>
</tr>
<tr>
<td>15. Percentage of Patients Responding Most Favorably Regarding Housekeeping in the Three Samples</td>
<td>70</td>
</tr>
<tr>
<td>16. Number and Percentage Responding &quot;Yes&quot; to Primary Nurse Question on Intervention and Comparison Units in the Three Samples</td>
<td>72</td>
</tr>
<tr>
<td>17. Number and Percentage of Patients Reporting Various Waiting Times Before and After Addition of Personnel in Admitting</td>
<td>74</td>
</tr>
<tr>
<td>18. Number and Percentage of Patients Reporting That They Had Heard of Closed Circuit Television Before and After its Installation</td>
<td>76</td>
</tr>
<tr>
<td>19. Number and Percentage of Patients Reporting That They Had Used Closed Circuit Television Before and After its Installation</td>
<td>78</td>
</tr>
</tbody>
</table>
## CONTENTS OF APPENDIX

<table>
<thead>
<tr>
<th>APPENDIX A</th>
<th>Instructions and Items of Patient Questionnaire</th>
<th>108</th>
</tr>
</thead>
</table>
CHAPTER I

INTRODUCTION

Consumers of hospital care could serve as sources of important information regarding the quality of services received, as well as their physical and emotional reactions to care. The patient is in the best position to know whether the physician or nurse talked in simple enough language, whether food was the right temperature when served, or whether the admitting personnel behaved courteously. Such information if adequately gathered from patients could be extremely useful to hospital administrators in identifying many types of service delivery problems, as well as aiding in the planning and evaluation of services.

Unfortunately, the data usually collected from patients have rarely been utilized in any way by administrators. This is true because most research regarding patient opinions of care has not employed a methodology which facilitates administrative use of patient feedback for decision making and problem solving. To be most useful, the questions asked of patients must be related to concrete, manipulable aspects of care received, so that administrators can make needed changes based on patient feedback. It should also be possible to collect patient responses repeatedly over time, so that a more detailed picture of patient responses is provided. Finally, because of the need for repeated data collection, patient responses should be both easy and inexpensive to obtain. The present investigation
involved development of an instrument which could easily be used to obtain data on concrete and manipulable aspects of hospital care across time.

Before patient feedback can be used with confidence by administrators, however, it is necessary to show that such feedback accurately reflects hospital conditions. Accuracy can be shown in three ways. First, patient responses should be reasonably free of errors or bias, that is, patient responses should correctly indicate what the patient has experienced or what the patient actually feels about services. If this type of accuracy is not evident, data from patients will give a false picture of conditions to administrators. Second, patient feedback must show sensitivity to differences in conditions by accurately reflecting the distinct experiences of certain types of patients or of patients from certain units within the hospital. Without this quality, administrators would be unable to use patient feedback to pinpoint problems within a particular setting or with a certain type of patient. Finally, patient responses must show sensitivity to change by accurately reflecting over time those changes taking place in service conditions which could be expected to have an impact on patient responses. Without this sensitivity to change, patient feedback could not be used in the evaluation of changes and interventions which take place in the health care setting. The present study involved a test of the accuracy of data gathered from hospital patients regarding their reactions to services. Accuracy was measured as the level of error in data, sensitivity to differences in conditions, and sensitivity to change.
CHAPTER II

REVIEW OF THE LITERATURE, PURPOSE, AND HYPOTHESES

Review of the Literature

Studies of Consumer Feedback Regarding Health Care

Investigations regarding consumer feedback about health services are numerous and very diverse. In terms of sheer numbers, Ware and Snyder (1975) indicated they had found over 100 patient satisfaction studies which had been conducted in the previous 25 years. Consumer feedback has also been collected regarding almost every type of health-care program imaginable. Table 1 lists the various types of health-care programs in which patient satisfaction or feedback has been obtained, as well as the major studies conducted regarding patient satisfaction with each type of program. As can be seen, at least 14 different types of programs have been assessed using patient responses and many of these programs have received repeated evaluation.

Of the many studies involving patient feedback about health care, few have lent themselves to use by administrators in planning and managing health care programs in spite of the important functions which patient feedback could serve. However, the limited utilization of patient satisfaction research by administrators is less surprising after viewing the evidence regarding the limited administrative use of most types of research findings.

Inadequate Utilization of Research by Planners and Administrators

There has been a growing concern expressed in the last few years
### Table 1

List of Health Care Programs and Published Studies in Which Patient Feedback Has Been Assessed

<table>
<thead>
<tr>
<th>Type of Program</th>
<th>Investigators</th>
</tr>
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<tbody>
<tr>
<td>Alcohol Rehabilitation Program</td>
<td>Moberg &amp; Zupek, note 1</td>
</tr>
<tr>
<td>Dental Care</td>
<td>Hengst &amp; Rochman, 1978</td>
</tr>
<tr>
<td>Emergency Room</td>
<td>Stratman &amp; Ullman, 1978</td>
</tr>
<tr>
<td>Female Health Care</td>
<td>Jolly, Held, Caraway, &amp; Prystowsky, 1971; Noyes, Levy, Chase, &amp; Udry, 1974</td>
</tr>
<tr>
<td>Health Centre (British)</td>
<td>MacDonald, Morgan, &amp; Tucker, 1974; Salber, Feldman, Johnson, &amp; McKenna, 1972; Woods, Patten, &amp; Pyper, 1974</td>
</tr>
<tr>
<td>Hospital</td>
<td>Abdellah &amp; Levine, 1957a; 1957b; Eisenberg, 1969; Harris and Associates, 1978; Raphael, 1965a; 1965b; Smith, 1977; Teetsel, 1975; Wessler, 1968; Wriglesworth &amp; Williams, 1975</td>
</tr>
<tr>
<td>Intensive Care Unit</td>
<td>Kirchhoff, 1976</td>
</tr>
<tr>
<td>Mental Hospital</td>
<td>Glenn, 1978; Souelem, 1955; Swearingen &amp; Thompson, 1978</td>
</tr>
<tr>
<td>Type of Program</td>
<td>Investigators</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Pediatric Program</td>
<td>Alpert, Kosa, Haggerty, Robertson, &amp; Hagarty, 1970;</td>
</tr>
<tr>
<td></td>
<td>DeCastro &amp; Amin, 1970; Deischer, Engel, Spielholtz, &amp; Standfast, 1965;</td>
</tr>
<tr>
<td></td>
<td>Korsch, Gozzi, &amp; Francis, 1968; Lebow, 1975</td>
</tr>
<tr>
<td>Physician's Assistant</td>
<td>Nelson, Jacobs, &amp; Johnson, 1974</td>
</tr>
<tr>
<td>Prepaid Group Plans/Health Maintenance</td>
<td>Aschcraft, Penchansky, Berki, Fortus, &amp; Gray, 1978;</td>
</tr>
<tr>
<td>Organization</td>
<td>Donabien, 1969; Pope, 1978; Weinerman, 1964</td>
</tr>
<tr>
<td>Student Health Service</td>
<td>Franklin &amp; McLemore, 1967</td>
</tr>
</tbody>
</table>
regarding the relationship of research and administrative decision making. Many authors have indicated that the information provided by evaluations and other types of research is often not adequately utilized by those involved in the planning and management of programs (Bunker, 1978; Freeborn & Greenlick, 1973; Patton, 1978; Polivka & Steig, 1978; Weiss, 1972). Researchers often lament the lack of impact that their work has on actual program operation.

The underutilization of research findings by administrators is most unfortunate given the wide variety of uses for such research at the management level. Information from research allows management to pinpoint problems and improve staff performance (Neuhauser, 1978), helps staff to solve day-to-day problems (Freeborn & Greenlick, 1973), and allows more adequate policy formulation (Wessler & Richart, 1964). Research based specifically on feedback from clients can be used by service organizations, including health care organizations, to improve the planning and evaluation of services (Attkisson & Hargreaves, 1979; Katz, 1975).

However, before patient satisfaction data can be more widely utilized by administrators, a number of criteria must first be fulfilled. These criteria relate both to questionnaire construction and data collection, and to the accuracy and sensitivity of patient responses. Each of these criteria will be discussed below in the context of past research on patient satisfaction.

Criteria Needed for Administrative Use of Patient Feedback

Questions should assess concrete, manipulable aspects of care. Client feedback must assess concrete, manipulable aspects of service
delivery, so that administrators can use these data to evaluate and modify those aspects of service delivery which are not functioning properly. A review of the patient satisfaction literature shows that there are at least two ways in which this criterion is not being fulfilled by most research. First, patient feedback is often collected through the use of attitude scales which contain general items, unrelated to the specifics of the patient care experience. A second major emphasis in the patient satisfaction literature is the study of the relationship of demographic characteristics and patient satisfaction. Since demographic characteristics are not subject to change by administrators, they would be of less interest to administrators than more manipulable items.

Attitude scales have been used extensively in the study of patient satisfaction with health care. The classic work in this field has been done by Hulka and her collaborators (Hulka, Kupper, Cassel, & Babineau, 1975; Hulka, Kupper, Daly, Cassel, & Schoen, 1975; Hulka, Zyzanski, Cassel, & Thompson, 1970; Hulka, Zyzanski, Cassel, & Thompson, 1971). Hulka et al. (1970) developed a sophisticated attitude scale using Thurstone techniques to measure attitudes toward medical care. The items are of a very general nature, and researchers using these scales have concentrated on investigating differences in satisfaction with medical care exhibited by the various sex, age and socioeconomic groups. Other authors using this type of attitude scale include Franklin and McLemore (1967), Hengst and Rochman (1978), Risser (1975), Souelem (1955), and Ware and Snyder (1975).

Research which investigates the theoretical concept of patient
satisfaction using attitude scales has been inadequate to meet the needs of health care administrators and planners because the items are not specific enough to allow them to identify concrete problems and act upon them. Rather than asking consumers to evaluate concrete aspects of their experiences, investigators ask the general population to rate how much they trust their physician or how understanding they think physicians are in general.

Demographic characteristics have also been frequently used in studies of patient satisfaction. Characteristics which have been investigated include age, sex, income, marital status, socioeconomic status, education, race, and religion. In many studies, exploration of the relationship between some demographic characteristic and patient satisfaction was the major reason for the research (e.g., Hulka et al., 1971; Hulka, Kupper, Daley et al., 1975). At other times, demographic characteristics seem to have been collected simply in an attempt to describe the sample (Glenn, 1978; Houston & Pasanen, 1972; Osterweis & Howell, 1979; Tubesing & Strosahl, 1976).

In most studies, demographic characteristics have shown an inconsistent relationship to patient satisfaction (Linn, 1975). Although Hulka et al. (1971) and Francis, Korsch and Morris (1969) found no relationship between age and satisfaction with care, other authors report a negative correlation (Kirscht, Hoefner, Kegeles, & Rosenstock, 1966; Nelson et al., 1974). To further confuse the issue, Raphael (1965a; 1965b) found a positive relationship. Although several authors (Gerst, Rogson, & Hetherington, 1969; Hulka, et al., 1971; Linn, 1975) found no relationship between sex and satisfaction, others (Apostle &
Oder, 1968; Hulka, Kupper, Daly, et al., 1975) have found differences. As Ware, Davies-Avery, and Stewart (1978) indicated, there is a great deal of contradictory evidence in the literature regarding the relationship of all major demographic characteristics and patient satisfaction. Whether or not there are differences in patient satisfaction related to a person's demographic characteristics, there is absolutely nothing the administrator can do to change a person's age, sex, or level of income. An issue of much greater concern to the administrator should be whether the client actually received acceptable care.

Stamps (1978) pointed out that there has often been a concentration on patient factors in the satisfaction literature to the detriment of facility factors.

It might be added here that although the literature on demographic characteristics is quite inconsistent, one area where administrators have some control has shown consistent results. Studies exploring the relationship of patient satisfaction to waiting time have consistently shown that satisfaction decreases as waiting time increases (Berkanovic & Marcus, 1976; Caplan & Sussman, 1966; Stamps, 1978).

In summary, although the measurement of concrete, manipulable aspects of care would facilitate administrative use of patient feedback, most researchers have not concentrated enough on these type of variables. Instead, many studies have used attitude scales with general items which would be of limited use to administrators. Another major emphasis in the patient satisfaction literature, the study of demographic characteristics and their relationship to satisfaction,
has been disappointing both because the relationship of demographic characteristics to satisfaction is very inconsistent and because demographic characteristics are less manipulable by administrators than concrete aspects of care.

Data should be collected repeatedly or at least in more than one setting. Patient feedback information for administrative use should be obtainable repeatedly or at the very least, should be obtainable from more than one setting so that comparisons are possible. The most desirable system is that of repeated data collection over time. However, when repeated data collection is not possible, comparative data from more than one institution can help administrators evaluate their strengths and weaknesses.

Many authors have pointed out the advantages of repeated collection of data intended for use by planners and administrators (Attkisson & Hargreaves, 1979; Bennis, 1966; Bunker, 1978; Knapp, 1979). By providing a view of the situation over time, repeated data collection facilitates the detection of changes in service delivery, allows verification of the long-term effects of interventions, and reduces the danger of drawing premature inferences from the data. Data collection over time also allows the use of powerful experimental or at least quasi-experimental designs in the evaluation of interventions. Less rigorous designs frequently produce false negative results.

Unfortunately, data have rarely been collected repeatedly by investigators using patient feedback. A review of the literature indicates only three cases of repeated data collection: Harris (1978)
in ambulatory care clinics, and Eisenberg (1969) and Teetsel (1975) in hospital settings. These authors were able to collect data over time because they used a precoded questionnaire format and computer processing of data. Two of these authors did report that the data were used by administrators to identify problems in service delivery (Eisenberg, 1969; Teetsel, 1975). Because of the importance of these three studies both as illustrations of repeated data collection and of the use of precoded response categories, they are reviewed in detail in the next section.

Where data collection over time is not possible, comparisons among different services or sites could still be very helpful. Data from other institutions allow the administrator to more accurately evaluate the importance of unexpectedly positive or negative responses.

Those researchers who utilized a comparison or control group when studying patient satisfaction have generally investigated a new form of health care. The vast majority of these studies involved persons recently enrolled in prepaid group plans compared to some other group, such as persons enrolled for a longer time, terminated subscribers, or persons with other types of insurance (Ashcraft et al., 1978; Bashshur et al., 1967; Berkanovic, Reeder, Marcus, & Schwartz, 1974; Gerst et al., 1969; Pope, 1978; Tessler & Mechanic, 1975). Other studies have compared comprehensive family-focussed pediatric care, an attention control, and a noncontact control (Alpert et al., 1970), two different health care centers (Salber et al., 1972), and small versus large clinics (Brooks, 1973). Finally, Abdellah and Levine (1957a, 1957b) developed norms for their questionnaire assessing
nursing care by studying 60 general hospitals.

Studies using comparison groups or normative data provide more information about the quality of services than studies for which no comparison is possible, because they provide a means of deciding whether a particular percentage of positive responses is high or low, expected or unexpected. Given the large number of researchers who have measured client reactions to services, the number of studies that have utilized comparison groups, normative data, or repeated data collection is limited.

Feedback should be easy to obtain and analyze. To be useful to administrators, client feedback should be easy to collect and analyze, or data collection will become cumbersome and data will reach administrators too late for use in decision making. Data collection and analysis can be facilitated by the use of questionnaires with precoded response categories since these can be easily filled out and quickly analyzed by computer. However, relatively few patient satisfaction studies have utilized this methodology. A more widely used method of obtaining patient satisfaction data is through interviews. Unfortunately, however, interviews require substantial time and financial investments for data collection, coding and analysis, making them prohibitive to use if data are to be collected repeatedly.

Interviews are a costly form of data collection, because they require an interviewer to spend large amounts of time both locating and questioning interviewees. After the interviews, responses must often be categorized and coded by hand, another time-consuming and expensive task. However, interviews have been used often in studies
of patient satisfaction because they provide detailed information about the patient's experiences.

Some researchers using interviews to collect patient satisfaction information have concentrated on discovering the social patterns of interaction which occur in medical settings, especially hospitals. Cartwright (1964) explored patterns of communication between patients and staff in a hospital in England, as well as patients' problems after leaving the institution. Duff and Hollingshead (1968) studied hospital organization, sociological interaction, the impact of illness on the patient, and staff roles. Houston and Pasanen (1972) investigated patient perceptions of the hospital and the impact of hospitalization on their understanding of their illness. Mauksch and Tagliacozzo (note 2) studied the patient role in the hospital. All these studies involved lengthy interviews using patient satisfaction as one component of a complicated model of social roles and interaction in the hospital.

Many other studies concerned with patient satisfaction have also utilized interviews as the method of data collection. Harris and Associates (1978) studied the opinions of physicians, hospital administrators, elected officials, and consumers regarding many aspects of health care. Other authors have asked both specific and general questions about a particular facility, using a lengthy personal interview format (Berkanovic et al., 1974; Deischer et al., 1965; Fisher, 1971; Raphael, 1965a; Salber et al., 1972; Wessler, 1968).

All these studies utilizing interviews have involved lengthy data collection and analysis which would preclude the use of such
instruments on a continuous or repeated basis. Often, such studies also have not provided patient feedback which was related to specific aspects of care, making these interviews even less useful from an administrative standpoint.

Questionnaires with preceded response categories have been used both in studies of concrete aspects of health care delivery and in some attitude studies, because data collection and analysis are more convenient and efficient when responses have been previously coded. The number of times that instruments with preceded response categories have been used to study concrete aspects of care is quite limited, but because these instruments allow the most efficient use of patient feedback by administrators, these studies will be discussed in detail.

The first major study using a preceded response questionnaire to assess patient evaluations of specific aspects of care was done by Abdellah and Levine (1957a, 1957b). These authors used careful pretesting to develop 52 items related to specific aspects of hospital nursing care. Patients were asked to indicate whether each particular item-event had occurred on the day the questionnaire was filled out or at some other time during hospitalization. Normative data were developed from a study of patients and personnel at 60 general hospitals, so that administrators at other hospitals could compare their results to general norms for nursing care. Since the cost of doing such a study was estimated at that time as $100 per 200 respondents, it would not be prohibitive to collect and analyze such data periodically. This methodologically refined work provided nursing administrators with an instrument for collecting patient feedback to pin-
point problems and evaluate solutions.

Two studies have been reported in which patient opinions regarding many aspects of hospital services were collected using precoded response questionnaires (Eisenberg, 1969; Teetsel, 1975). In both cases, the authors developed mail questionnaires which could be sent to patients discharged from a hospital. Patients were asked to indicate their satisfaction with specific characteristics of service from several areas, including admitting, food service, housekeeping, nursing, and accounting. The information gathered from these questionnaires was printed out by computer on either a monthly or quarterly basis. Patient answers were indicated separately on the printout for each nursing unit in the hospital, making it possible to quickly identify specific problems with services. Both of these authors reported that the information was used by hospital administrators to identify problems or to reinforce previous conclusions about difficulties.

Precoded response questionnaires have also been used to collect patient feedback about ambulatory care (Harris, 1978). The methodology of this study differed from that of the two just mentioned because the author encouraged staff involvement in the design of the questionnaire and the choice of items. Questionnaires could contain a maximum of 40 items and patients completed the questionnaires before leaving the clinic. Because Harris studied eight clinics, he was able to observe certain differences in the level of staff involvement in the questionnaire. In the four clinics where there was high staff involvement in the design of the questionnaire and a formal mechanism for staff review of the data, there was marked improvement in patient
satisfaction after the questionnaire results had been reviewed by the staff. In two clinics with an informal means of communicating results to staff and moderate staff involvement in questionnaire design, there was no change in patient satisfaction from first to later samples. In the two clinics where staff knew that patient satisfaction data were being collected, but they were not given any feedback about what patients thought, patient satisfaction with services declined over time. Although these data are correlational in nature, they suggest that patient feedback, if properly utilized by administrators, can have a positive effect on staff behavior. Harris did not report whether patient feedback was also used for problem identification or solution evaluation.

The methodologies of the studies just reviewed encouraged repeated collection of information on concrete aspects of patient care. There were differences between the studies, both in the means of data collection (on site vs. mailed questionnaires) and in the type of data collected (data related to nursing, ambulatory, or general hospital services). However, the basic similarity underlying the studies was the use of precoded, closed-ended responses, which eliminated the need for an interviewer and allowed computer analysis of results. Considering the large number of studies measuring patient satisfaction, the number of instruments developed which allow such efficient, low cost data collection and analysis is very small.

From the standpoint of administrative decision making, a useful instrument for collection of patient feedback would be one which allows low cost and repeated collection of information about manipu-
lable aspects of service delivery. The review of the patient satisfaction literature regarding fulfillment of these criteria has suggested that attitude scales and interviews usually do not provide concrete or easily collected data. Questionnaires with pre-coded response categories, when used to collect patient feedback regarding concrete aspects of care, have provided the only data which have been used by health care administrators for identification of service delivery problems. Patient feedback could be used much more extensively than it has been to plan and evaluate service delivery changes, but before this can be done with confidence, the accuracy of patient feedback data must be carefully assessed.

Information from patients should be reasonably free from error and unbiased. Administrators should not use patient feedback unless it is a reasonable reflection of reality, since inaccurate or biased data would be misleading and could cause errors in decision making. The information available regarding the level of error in patient feedback is limited and mixed. Although there is some reason to suspect that data collected from patients may have moderate levels of error and bias, in the few cases in which patient reports of specific events have been checked, those reports have been reasonably correct.

There is some evidence to suggest that people often give inaccurate responses when reporting information about themselves and their activities. One study that compared interview respondents' answers with public records found discrepancies in the answers of from 2% to 40% of respondents (Parry & Crossley, 1950). While only 2-4% of respondents inaccurately reported owning a home, auto, or phone, 17%
reported their age as different from that given by public records, 13-28% inaccurately reported on voting behavior, and 40% falsely stated that they had contributed to the community chest. This range of inaccuracy suggests that the type of information requested may influence the level of error in the answer.

In addition, people may not report their true feelings when asked about their reaction to or satisfaction with services. A positive response bias is frequently found when people are asked to evaluate their satisfaction with services depending on how they are asked (Gutek, 1978; Scheirer, 1978). Duff and Hollingshead (1968) reported that in many cases, patients who had not expressed dissatisfaction with their medical care in their responses to a routine questionnaire mailed from the facility being studied, reported dissatisfaction in an interview with the researchers. Given the notable positive bias other authors report, it seems likely that patients' true feelings were negative.

On the positive side, there is some evidence that patients can give correct information when reporting what has happened to them. In the course of developing their instrument, Abdellah and Levine (1957a) requested information about negative events occurring in the hospital from both patients and staff. Where specific events were indicated, these events were checked by researchers to see whether both staff and patients reported the same event. It was found that patient and personnel "frequently" corroborated each other. Patients have also been accurate when answering questions about time. Alpert et al. (1970) found that waiting time ratings given by patients were consis-
tent with a time and motion study of the clinic which had been done previously. Deischer et al. (1965) found that while mothers estimated that they spent an average of 17.9 minutes with the physician, nursing records indicated an average of 17 minutes being spent.

The evidence presented here suggests that what little is known about the level of error in patient assessments of care provides at best a mixed picture. Although a few studies assessing the level of error in patient reports of their actual experiences have indicated their responses are fairly accurate, there is substantial evidence that people often give incorrect or biased responses when reporting information about themselves and their feelings, especially when asked about their general feelings toward services received.

Feedback should be sensitive to differing service delivery conditions. Patient responses should show sensitivity to differing service delivery conditions because this sensitivity demonstrates the validity of the instrument and thereby establishes the credibility of the results. Sensitivity to differing service delivery conditions means that patient responses accurately reflect the distinct atmosphere or service experienced by patients of different types or from different service areas. If patient responses accurately reflect differing conditions, then administrators can use the information from patients with a high degree of confidence when identifying problems at the unit level or with a particular type of patient or service.

Three studies have been published which offer support for the assumption that patients can, at least at the broad level of satisfaction, provide responses which reflect differences in conditions.
In one, Blum (1962) used blatant patient discontent as an indicator of hospital quality. He chose hospitals with low or high numbers of claims or malpractice suits filed by patients, and then had them rated for quality of care in several different ways. Using ratings of an expert, information from staff, and hospital records, he was able to show that hospitals with high numbers of patient suits filed had far fewer nursing hours per patient, lower satisfaction of nurses with the hospital, and more reports of unsafe and unsanitary conditions. Along a similar line, Abdellah and Levine (1957a) found that hospitals with more hours of professional nursing were those in which patients reported greater satisfaction. Finally, Kisch and Reeder (1969) also provided evidence that patients are able to discriminate between good and poor quality care. Good and poor care were defined in terms of years of physician training and type of practice, criteria cited by health professionals as important indicators of quality of medical care. Ambulatory welfare patients were asked to indicate whether their physicians gave the type of care these patients desired. Positive patient evaluations were more likely for physicians having more years of training, those limiting their practice, and those participating in group practice. Physicians who had fewer years of training, who did not limit their practices and who practiced alone were less highly evaluated.

Although these studies suggest that patients can provide responses which accurately reflect the differences between good and poor quality care, the evidence presented is very limited. These studies have only explored the relationship of patients' overall ratings of
their satisfaction to some outside evidence of quality of care. What is still lacking is evidence concerning how well patient assessments of specific aspects of care accurately discriminate among patients who have experienced differing conditions.

**Feedback should be sensitive to change.** Sensitivity to change is one dimension of response accuracy that should be of major concern to administrators. Sensitivity to change means that a change in conditions will be accompanied by a change in consumer responses which reflects these new conditions. Without this sensitivity, the information from patient questionnaires cannot be used to evaluate the impact of changes made in an effort to solve problems.

Although no study has been reported which assessed the sensitivity to change of patient responses, a major difficulty which could detract from the sensitivity of such responses to change is the highly skewed nature of patient satisfaction responses. Highly skewed responses reduce the amount of positive change that is possible, making it difficult to assess improvements in conditions (Posavac & Carey, 1980). For example, the amount of improvement possible is much greater when half of the respondents are satisfied than when 90% of the respondents are satisfied.

As mentioned earlier, most clients report high levels of satisfaction with almost any program, at least in questionnaires. Reports of satisfaction tend not to discriminate between those who act dissatisfied (e.g., by getting a divorce, changing jobs) and those who do not (Gutek, 1978; Scheirer, 1978). Campbell (1969) summed up this problem by suggesting that the best way for an evaluator to obtain a
positive evaluation of a program is to use only testimonials from clients.

There are many examples in the patient satisfaction literature in which high percentages of patients reported being satisfied. In several studies, from 82% to 98% of the respondents reported satisfaction (Deischer et al., 1965; DeCastro & Amin, 1970; Houston & Pasanen, 1972; Kain-Caudle & March, 1975; Nelson et al., 1974; Tubesing & Strosahl, 1976). In fact, in most studies, over 70% of the respondents reported satisfaction with care, leaving little room for improvement (Alpert et al., 1970; Buckley, 1963; Cahal, 1962; Gerst et al., 1969; Kisch & Reeder, 1969; McPhee, Zusman, & Joss, 1975; Osterweis & Howell, 1979; Raphael, 1965b; Tessler & Mechanic, 1975; Weinerman, 1964; Mauksch & Tagliacozzo, note 2).

While a high percentage of patients will usually respond positively to questions about patient satisfaction, when questioned about the specifics of care many of them will report being dissatisfied or having experienced unsatisfactory conditions. In one study, although 98% of the sample responded that they had received the best care possible, 34% of the sample were unaware of who would be responsible for their care when they entered the hospital, 25% were unable to find out what they wished to know about their care, and 17% said they would be reluctant to return to the hospital if a different problem arose (Houston & Pasanen, 1972). In another case, although 75% of the sample said they had received good care, only 45% felt the physician had given thorough explanations (Cahal, 1962). Although Deischer et al. (1965) found 95-98% patient satisfaction, patients were much less
satisfied with fees, physician willingness to make house calls, and waiting time. Jolly et al. (1971) reported that personnel were evaluated highly, but 40% of respondents complained about explanations received, and 38% were confused by the clinic situation. Mauksch and Tagliacozzo (note 2) reported that while 78-87% of their sample praised nursing care, medical care, and hospitals in general, 45-59% also criticized some aspect of care. Despite high general satisfaction, Osterweis and Howell (1979) reported that satisfaction was as low as 17% when patients were asked about issues like the ease of making complaints and the availability of specialists. Glenn (1978) reported satisfaction ranging from 30-87% with lowest satisfaction for specific areas like meals and information given.

In summary, although no research has directly measured sensitivity to change of patient responses, the tendency for many patients to respond positively to satisfaction questions could limit the sensitivity of surveys. However, concrete questions often elicit lower levels of satisfaction than general questions, and hence greater possibilities of response change (i.e., improvement). Since concrete questions measure specific, manipulable aspects of service delivery which often are of major concern to administrators, such questions can give a good indication of the quality of patient care received.

This review of the patient satisfaction literature as regards its use by administrators suggests the following conclusions. First, of the many studies tapping patient satisfaction, few have provided data to administrators which would allow decision making to occur. However, a data collection instrument could be designed which meets
the needs of administrators by measuring concrete, manipulable aspects of care and allowing repeated data collection. Such an instrument would avoid the problems of attitude scales which are too general to be helpful and interviews which make data collection too lengthy and costly to be done repeatedly. Second, this instrument needs to be tested to verify the accuracy of patient responses; that is, the level of error in such responses, their sensitivity to differing conditions, and their sensitivity to change. Assessments of these characteristics are needed before responses from patients can be used with confidence in identifying problems in service delivery and evaluating solutions to those problems. Patient responses have rarely been studied in terms of whether they fulfill these characteristics. The limited evidence available is mixed regarding how accurate patient responses may be.

Purpose and Hypotheses

The research described below had two purposes: (a) to develop an instrument which could easily provide hospital administrators with concrete, useful data from patients on a repeated basis, and (b) to use the data from the patient feedback instrument in assessments of patient response accuracy. Accuracy was defined as freedom from error, sensitivity to differing conditions, and sensitivity to change.

In order to fulfill the first purpose, the instrument was developed with the help of hospital administrators who indicated those specific manipulable aspects of care that they wished to have measured. The instrument was developed so that it could be mailed directly to the patient, answers were provided in precoded response categories, and responses were analyzable by computer. A computer program was
developed so that a summary of patients' answers could be printed out automatically. These procedures were implemented to allow repeated data collection and analysis at a low cost.

Assessments of the accuracy of patient responses to the questionnaire were made by examining data from several items of the patient questionnaire. Before discussing each of these assessments in detail, it should be noted that these assessments could only provide a crude measure of the accuracy and sensitivity of patient responses. On the one hand, only the accuracy of a few items was directly assessed, so that the accuracy of other items must still be assumed. A more serious problem is that if an assessment suggests that patient responses do not show sensitivity to differences in conditions or sensitivity to change, there are a number of possible reasons why this could occur. Specifically, patient responses may be different from those expected either because the patient did not perceive the event as expected, because the event did not occur as expected, or because patient responses were inaccurate. Only the last one of these explanations would suggest that the instrument was inadequate. When the other explanations are true, a direct test of patient response sensitivity is not possible. Therefore, based on the analyses done here, when patient responses do not fulfill predictions regarding sensitivity to differences in conditions or sensitivity to change, it will be difficult to know whether the patient responses were insensitive or whether some other condition did not occur as expected. However, when patient responses fulfill predictions, the specificity of these predictions allows greater confidence in the sensitivity of patient responses.
Measurements of the Level of Error in Patient Responses

The question of major interest here is whether the responses which patients give correspond to the reality of what they have experienced. This is a difficult assessment, because in most cases, only the patient has access to what was experienced. However, there were four cases in which data from other hospital sources provided a rough check on the level of error in patient responses. In two cases, it was known beforehand that a particular response to an item was the only one that could be considered correct. In two other cases, data were available from other sources that were expected to correspond to patient answers.

For two items related to the system of closed circuit television for patient education purposes, the correct response was known for all patients. Since the system was not functioning when the questionnaire was sent out to the first two samples of patients, it is certain that patients had no contact with it. However, patients answered questions about their knowledge of the existence of and their personal use of the system. Answers to these questions, given before the system was installed, were inspected in an effort to detect the amount of error in responses.

A study of patient reaction to the closed circuit television system done by the Department of Evaluation and Research after the system began functioning, (Talarowski, note 3), provided further data for assessing the accuracy of patient responses. Interviews with inpatients regarding their evaluation of the closed circuit television system provided information about whether patients had heard of the
closed circuit television system and whether they had used it. These data were essentially comparable to the questions asked in the patient questionnaire, so that a comparison was possible between the percentages of inpatients and of questionnaire respondents reporting knowledge and use of the closed circuit television system.

The final assessment of patient response error involved a comparison of patient reports of the amount of time they spent waiting in admitting with information about patient waiting time gathered by the admitting staff. Patients were asked on the questionnaire how long they waited in the admitting area. Their responses to this question were compared to data collected by admitting staff on the amount of time each patient spends from the time he/she checks in with the receptionist until the patient can be interviewed by admitting personnel.

Assessments of Sensitivity to Differences in Conditions

The measurement of sensitivity to differences in conditions involved the assessment of whether patient responses to certain items reflected the differences in conditions experienced by particular types or groups of patients. In order to discover some items that could be used for these assessments, administrators were asked whether they expected differences in the way patients would respond to certain items. There were four cases in which managers had clear predictions of how certain types of patients would differ from other types of patients in their responses to specific items. Occasionally, managers also predicted no differences between these groups in their responses to other items.
During the development of the questionnaire, the manager of housekeeping indicated that he felt there would be major differences in the satisfaction of patients admitted on days when there were high numbers of discharges compared to patients admitted on low discharge days. His reasoning was the following: on high discharge days, housekeeping personnel must do major cleaning in a larger number of rooms. This greater work load could force housekeepers to work more rapidly, resulting in rooms which were not cleaned as well as might be desired. Patients admitted to such rooms get their first impression of housekeeping from less than ideal conditions. Since this problem could be expected to affect patient responses regarding all aspects of housekeeping, it was expected that patients admitted on high discharge days would be less satisfied on all items related to housekeeping than patients admitted on low discharge days.

In order to further assess whether patients were able to discriminate between housekeeping and other aspects of their care, patients' opinions of food service were investigated. It was expected that patients admitted on high discharge days would not differ from those admitted on low discharge days regarding their evaluation of food service items.

The director of admitting indicated that reported waiting time should show a relationship to the day on which the person was admitted. She observed that persons admitted on Sundays generally must wait longer than patients admitted on other days due to the lower number of admitting personnel available on that day. This prediction was tested by comparing reported waiting times of patients admitted on Sunday and
those admitted on all other days.

The director of food service indicated that patients who received modified diets might be expected to differ from those on general diets. Patients on modified diets often must eat bland food, only liquids, or very restricted types of food. Such patients should be more likely to be dissatisfied with two aspects of food service, the taste of food, and the degree to which they received the items they had selected from their menus. Certain other food service items should be unaffected by these diets, such as the attractiveness of the tray and temperature of the food. The accuracy of these predictions was assessed.

In general it was expected that differences in conditions experienced by patients would result in predictable differences in responses. The assessments of predictions made by managers were done as a test of the sensitivity of patient responses to these differing conditions.

**Measurements of Sensitivity to Change**

The sensitivity to change of patient responses was measured both by assessing the potential for change in the data and by examining the changes in patient feedback following changes in hospital functioning. As suggested above, there is a need to assess the potential for change by measuring the level of positive responses being given, since the level or percentage of positive answers may limit the amount of improvement or change that is possible in patient responses. Beyond this initial measure, it is also important to assess whether changes or interventions in the hospital are followed by a
change in patient responses to certain items which are logically related to the intervention. The effects that four changes in hospital functioning had on patient responses were assessed.

Potential for change in patient responses. In order to assess the potential for change of responses to questionnaire items, all items with five response categories were examined. The percentage of respondents who used the most positive response category was recorded for three samples of respondents in order to determine the amount of improvement or change which each item allowed. As a rough criterion, it was felt that items should not receive the most positive answer more than 70% of the time in each sample.

The effects of hospital changes on patient responses. The effects of four changes in hospital conditions which were expected to cause changes in patient responses to particular items were assessed. It was felt that an examination of the changes in patient responses would provide evidence regarding sensitivity of these items to change. The background and reasoning behind each of these assessments will be described here, while the details regarding the intervention itself will be given in the method section of this research.

The first innovation was designed in response to a problem revealed by preliminary patient feedback research (Marin, Carey, & Posavac, note 4). It was found that patients who had a Primary Nurse were no more likely to say they had one than patients who did not have a Primary Nurse. Primary Nursing is a system in which a particular nurse is in charge of the care of each patient, just as a particular physician is in charge of the care of each patient. In order for the
Primary Nursing system to be maximally effective, the patient must be aware of the system; that is, patients must know that they have a Primary Nurse, so that the nurse can be contacted when needed. The patient questionnaire included the question "Did you have a Primary Nurse?" in order to assess the level of patient awareness of the existence of their Primary Nurse. Since only 20% of the patients from Primary Nursing units indicated in this earlier research that they had a Primary Nurse, it was assumed that most patients on these units were unaware of the existence and function of their Primary Nurse. In fact, 20% of patients from non-Primary Nursing units also indicated that they had a Primary Nurse.

In order to increase the visibility of Primary Nurses, a quasi-experimental intervention was devised. The intervention involved giving business cards to Primary Nurses on some units, and asking them to give these cards to their patients at the time the explanation of Primary Nursing was given. This intervention was expected to boost patient awareness of both the existence of Primary Nursing and the identity of their own Primary Nurse. It was hypothesized that on units where patients had received business cards, the percentage of patients saying they had had a Primary Nurse would increase, both as compared to the units where business cards were not given, and as compared to responses of patients from the same units before business cards were introduced.

Two changes which were expected to affect patient responses also took place in the admitting area. The head of admitting implemented several changes in the furniture arrangements of the admitting area
in September, 1979. These changes were designed to give the patient more privacy while talking to the admitting personnel and a more pleasant atmosphere while waiting. The changes were expected to improve patients' overall satisfaction with admitting. A subsequent intervention, in November, 1979, was expected to lower patient waiting time. At that time, four new employees were added to the admitting staff with the expectation that patients would be served more efficiently.

The effect of a fourth innovation was assessed. Since the closed circuit television system was initiated after patients' assessments of hospital services had begun, it became possible to test whether or not patients indicated that they had heard about the system before and after its introduction. It was expected that a higher percentage of patients would report having heard of and having actually used the system after its introduction than before.

Summary of Areas to be Investigated and Hypotheses

The review of the literature provided mixed evidence about whether patient responses will be accurate, sensitive to differences in conditions, and sensitive to change. However, for the sake of simplicity, hypotheses have been stated in the form of expectations that are fulfilled when the questionnaire responses are accurate and sensitive.

Level of error in patient responses was investigated in the following manner:

1. Patient responses regarding their knowledge of the existence of the closed circuit television system for patient education were
examined before its installation. Patient responses were expected to indicate no knowledge of the system at that time.

2. Patient responses regarding their use of the closed circuit television system were also examined before its installation. It was expected that patient responses would indicate no use of the system before it was installed.

3. Patient responses regarding knowledge and use of closed circuit television were compared with data from a study in which patients were interviewed regarding these same issues. It was expected that data from these two sources would not differ significantly.

4. Patient responses regarding the amount of time they spent waiting in admitting were compared to staff reports of patient waiting time. It was expected that these two would not differ significantly.

Sensitivity to differences in conditions was investigated in the following manner:

1. Responses of patients admitted on high discharge days were compared to those of patients admitted on low discharge days regarding satisfaction with housekeeping and food service. It was expected that (a) patients admitted on high discharge days would be significantly less satisfied with all aspects of housekeeping than patients admitted on low discharge days, and (b) patients admitted on high discharge days would not differ significantly from patients admitted on low discharge days regarding their satisfaction with food service.

2. Patients admitted on Sundays were compared to patients admitted on all other days regarding their reports on waiting time in admitting. It was expected that patients admitted on Sunday would
report waiting significantly longer than patients admitted on other days.

3. Patients on modified diets were compared to patients on general diets regarding their satisfaction with food service items. It was expected that (a) patients on modified diets would be significantly less satisfied with food flavor and receiving the items they had selected from the menu, and that (b) patients on modified diets would not differ from patients on general diets regarding their satisfaction with attractiveness of the tray and food temperature.

Sensitivity to change was investigated in the following manner:

1. To investigate the amount of change or improvement which patient responses allowed, the level of positive responses given to all items with five response categories was examined. As a criterion, it was expected that no more than 70% of each sample would use the most favorable response.

2. The effect of introducing business cards with the name and title of their Primary Nurse was assessed by examining patient responses regarding whether they had had a Primary Nurse. It was expected that patients on units where nurses had been given business cards to use with their introduction would significantly more often report having had a Primary Nurse than either patients on those same units before nurses were given the business cards or patients on other Primary Nursing units where the business cards were not being used.

3. The effect of changes in the furniture arrangements designed to improve the atmosphere in admitting was assessed by examining patients' overall satisfaction with admitting. It was expected that
patients surveyed after the changes would be more satisfied with admitting than patients surveyed before the changes.

4. The effect of an increase in the number of admitting personnel was assessed by examining patient reports regarding waiting time before and after the increase in personnel. It was expected that patients surveyed before the increase would report longer waiting times than those surveyed after the increase.

5. The effect of the installation of the closed circuit television system was assessed by comparing patient responses to questions about use of the system before and after its installation. A marked increase was expected in the number of patients who reported having heard of and having used the closed circuit television system after its installation.
Subjects

The accuracy and sensitivity of responses to the hospital patient questionnaire were assessed using three stratified random samples of patients discharged from an 800 bed general, teaching hospital located in a suburb of Chicago. Patients in the first sample were discharged between May 22 and June 22, 1979, those in the second sample between August 22 and September 22, 1979, and those in the third sample between January 1 and January 27, 1980. The sample obtained in June consisted of 408 former patients, the one obtained in September consisted of 332 former patients, and the one obtained in January consisted of 340 former patients.

A number of criteria were used in the selection of patients to be included in these samples, related to both the types and quantity of patients included. Certain types of patients were automatically excluded from the sample, including newborns and patients who had died, as well as patients discharged from the alcoholism treatment facility. These patients either would have been unable to respond or had received treatment so different from that assessed as to make the questionnaire items irrelevant. In the second and third samples, patients from pediatric, psychiatric, and oncology units were also excluded because of the low response rate of these patients, or because
these former patients (or their parents) were expected to view completing the survey as a burden. Questionnaires were sent to patients discharged from 18 different nursing units in the first sample, 15 different units in the second sample, and 16 different units in the third sample, thus allowing administrators to assess the services given on various units by comparing the respective patient responses.

Because the number of patients served in any month differs greatly from unit to unit, requirements were placed on the number of patients who were sampled from each unit, resulting in a stratified sample. In order to have a sufficient number of respondents from units with low numbers of discharges, while at the same time keeping costs low, approximately the same number of patients were selected from each unit. For most units, 20 patient names were requested for each sample. If 20 or fewer patients were discharged from a unit during the specified time period, all patients were utilized in the sample. Where more than 20 patients had been discharged, 20 patients were randomly sampled from the total discharged. However, for two especially large units, 40 patients names were requested instead of 20.

Development of the Instrument

To measure patient reactions to services, an instrument was developed which contained items regarding several important aspects of hospital care. The steps involved in developing these items were as follows: selection of the departments that were to be evaluated, definition of patient care goals, the development of goal-related items, the development of an importance rating for each goal, and finally the development of other items providing information desired
by department heads. The process of pretesting that followed served to refine these items.

**Selection of departments to be evaluated.** Because of practical limitations, only a few of the many departments in the hospital could be evaluated by patients. An attempt to include all departments which serve patients would have resulted in an excessively long instrument which few patients would have completed. Also, the expense of collecting patient feedback could not be justified unless administrators planned to use it. The departments of nursing, food service, admitting, and housekeeping services were selected for evaluation because the heads of these departments had expressed a strong interest in systematically measuring patient opinions and using the information for departmental decision making. Assessment of these departments was also considered important because public relations personnel of the hospital had indicated that patients often have strong reactions to the services of these departments.

Several important services were not included in this questionnaire. The accounting department was not included because patients do not receive a final bill for several months after hospitalization, and therefore feedback from patients would have to have been delayed too long for administrators from other departments to find the data useful. Patients' opinions about their medical care were not included because of a lack of expressed interest on the part of physicians in patient opinions. Other smaller services were not evaluated because a single question would not be sufficient to measure specific aspects of care and many questions would make the questionnaire exces-
sively long. An added reason for not including other departments was that many patients had not had contact with these services, making it impossible for them to accurately evaluate their performance.

Definition of goals. The development of items for the questionnaire began with the process of identifying and defining the most important patient care goals for each department. Two sources of information were used to identify these goals: dialogue and interviews with key staff and administrators and interviews with patients. Department heads and staff were initially interviewed in order to pinpoint those aspects of patient care which they felt were most important. Later, interviews were also conducted with 15 patients. These patients were asked to identify those aspects of each department's services which were especially helpful or which needed improvement. The information gathered from these open-ended interviews was transmitted to the staff and department heads to facilitate clarification of patient care goals.

Development of goal-related items. Once the goals had been clarified, the author developed a number of statements which operationalized the goals of the departments. These statements were revised until department heads were satisfied that goals of service which patients could evaluate had been properly operationalized. Responses to these items were to be reported on 5-point "agree-disagree" scales. For example, one item stated "Admitting personnel took time to answer questions" and responses were "agree strongly," "agree somewhat," "neither agree or disagree," "disagree somewhat," or "disagree strongly."
Development of an importance rating for each goal. A rating of the importance of each goal which departments had identified was constructed to allow department heads to prioritize those issues needing improvement, so that issues of greatest importance to the patient would be handled first when changes were needed. For each of the goal-items previously developed, an item which allowed respondents to rate importance of the goal was constructed. For example, the item about admitting personnel taking time to answer questions which was mentioned previously corresponded to the importance item "Getting answers to my questions in admitting was..." Answers ranged from "very important to me" to "very unimportant to me" on a 5-point scale.

Development of other items. Several items were developed for the questionnaire which department heads felt were important indicators of performance, but which did not fit the "agree-disagree" or importance formats. Some of these items asked specific direct questions about foods patients liked or the amount of time they expected to wait in admitting. Other items measured the patients' overall evaluation of each department and the hospital in general, on a 5-point scale from "excellent" to "very poor." Still other items asked patients to rate their level of pain and anxiety while in the hospital on a 5-point scale from "extreme" to "none or almost none."

A number of questions about patient characteristics were also used in order to make the data more meaningful. Each department had some liberty to include those characteristics which were thought to be most important. Patient characteristics included demographic variables, such as age and sex, as well as hospital care related items such
as the type of diet the patient received. Instructions for item completion were also developed.

Pretesting and Revisions of the Instrument

Once the initial instrument had been constructed, the instrument was pretested repeatedly to identify and correct problems with the items and the format. After each pretest, changes were made until pretest results indicated that the instrument had no major problems. The results of the final pretest were used to aid department heads in selecting items for the final instrument.

First pretest. The instrument described above was pretested on a sample of 15 hospital inpatients. For the pretest, patients were given the questionnaire and were asked to follow the written instructions, while also noting those items that were difficult to understand. After patients completed the questionnaire, the author gave them feedback regarding their answers (e.g., "I see you disagree with this item about food service. Does that mean that you feel food temperatures were unacceptable?"). By giving patients feedback about what their responses meant, it was possible to detect confusion about item wording and instructions.

A number of problems with the instrument were detected during this initial pretest. For one, it was learned that several respondents had difficulty with the "agree-disagree" response format. It was also found that the questionnaire was too long for some patients to complete. Finally, several specific items were found to be confusing to some patients.

Revised version of the survey. On the basis of the first pre-
test, several changes were made to shorten or improve the questionnaire. Items regarding the importance of the goals of patient care were dropped, because the initial questionnaire had been too long for patients to complete. Items found to be confusing in the first pre-test were either reworded or dropped. Finally, the "agree-disagree" response format was changed. Rather than being asked to express degree of agreement with an item, patients were now asked to indicate how often something had occurred on a 5-point scale ranging from "always" to "never." For example, patients were asked "Did noise on the unit bother you?" and could answer either "always," "often," "sometimes," "seldom," or "never." Patients who were not accustomed to taking tests or completing questionnaires were expected to be better able to answer a direct question than to evaluate their level of agreement with a statement. Where this response format could not be used because of item content, a "yes-no" format was used. For example, patients were asked "Did admitting personnel take time to answer your questions?" and they could respond "yes," "unsure," or "no." All items also included a "does not apply" response option.

Subsequent pretests. This second form of the questionnaire was again tested on 15 hospital inpatients using the pretest procedure described above. The results of this pretest indicated that the new response formats facilitated patient response.

The third pretest was carried out to discover how the questionnaire functioned with a large sample and to help the author and administrators determine whether any items should be added or deleted. For
this final pretest, the questionnaire was mailed to a sample of 400 recently discharged patients. Of these, 167 returned useable questionnaires and the data from these were analyzed by computer (Marin et al., note 4). The process of collecting and analyzing this patient feedback revealed some procedural problems. The return rate for this sample (33%) was low, and the computer analysis proved cumbersome and lengthy. To improve the return rate, the telephone followup procedure used with later samples was developed. To facilitate future computer analysis, a program was developed which automatically printed out tables of results for each department.

The third pretest also helped the author and administrators decide on the final set of items which were to appear in the instrument. For this decision, two criteria were used: items were considered to be worthy of inclusion in the instrument if administrators indicated that they had control over the conditions presumed to be causing negative patient responses to service-related items, or if the item measured a patient characteristic which administrators felt would differentiate groups of patients in their responses to other items. To aid in item selection, department heads were given detailed feedback regarding patient responses to each item. They were then asked what they could do about each service-related item if patient response indicated problems in the area to which that item referred. Those items which department heads felt they could influence were included in the final version of the patient questionnaire. Also, administrators were asked how patient characteristics would differentially influence patient responses to service-related items. Where patient
Final version. The final version of the questionnaire starts with a letter from the president of the hospital requesting the patient's cooperation with the study. Instructions on completing the questionnaire follow, along with the 66 items selected for inclusion in the final version. A coupon good for a beverage and dessert at the hospital cafeteria is included as a token of appreciation for the patient's time. It was hoped that the coupon would increase patient response rate by indicating the interest of the hospital in this information. The questionnaire was mailed without an envelope for the first two samples, but was subsequently put in envelopes to improve its appearance on arrival at the patient's residence. A section for patient comments appears at the end of the questionnaire and prepaid return postage is included. (Appendix A contains the instrument items and instructions.)

Procedure

The questionnaire described above was sent to patients in each sample within one week of sample selection, or one to five weeks after discharge. In those cases where a patient had not returned the questionnaire within two weeks of mailing, hospital volunteers and staff attempted to contact the patient by phone in order to request that the questionnaire be completed and returned. Those who could not be reached or who requested a second copy were mailed a reminder letter and a duplicate survey.

Hospital changes. Sensitivity of patient responses to certain
hospital changes was measured in this study. Table 2 presents the
dates when each hospital change was introduced and dates when samples
of patient feedback were collected. The changes which took place in
the hospital are described below.

A number of improvements in the appearance of the admitting
area took place during August, 1979. New furniture, plants and a
mural were introduced in the waiting area, and patients were provided
with reading material while waiting. Furniture was also rearranged
so that personnel would no longer pass in front of patients when they
moved from one office to another. Also, in November, 1979, the number
of personnel working in admitting was increased from 27 to 33, a 22%
increase in staffing.

In the last week of July, 1979, an intervention involving busi­
ness cards for Primary Nurses was implemented. The business cards
stated "My name is __________. I will be your Primary Nurse during
your stay on this unit," and indicated the patient care unit number.
These cards were intended to increase patient awareness of their Pri­
mary Nurse. The cards were given to the Primary Nurses on two of the
five Primary Nursing units where patient feedback was collected. At
separate unit meetings the assistant director of nursing told nurses
that there was an inadequate level of knowledge on the part of patients
about their Primary Nurses. She further explained that the business
cards should supplement, not replace, the nurse's usual introduction
and explanation of Primary Nursing. Meetings lasted approximately
20 minutes. Nurses were reported to have reacted positively to the
idea of business cards and to have implemented the intervention as
Table 2

Dates When Innovations Introduced and Samples Discharged

<table>
<thead>
<tr>
<th>Innovation</th>
<th>Dates Introduced</th>
<th>Dates Samples Discharged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prechange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Furniture in Admitting</td>
<td>August, 1979</td>
<td>May 22-June 22, 1979</td>
</tr>
<tr>
<td>Introduce Business Cards</td>
<td>July, 1979</td>
<td>August 22-September 22, 1979</td>
</tr>
<tr>
<td>Introduce Closed Circuit Television</td>
<td>November, 1979</td>
<td></td>
</tr>
</tbody>
</table>
specified.

On November 5, 1979, the closed circuit television system for patient education was inaugurated. The system allowed patients to select programs regarding health issues and to view those programs using the television sets provided in their rooms. Patients were given written information about the system upon their admission to the hospital. Nurses were also instructed to remind patients about the availability of the programs.
CHAPTER IV

RESULTS

Return Rate

The first sample obtained in this study consisted of patients discharged between May 22 and June 22, 1979. A total of 408 questionnaires were mailed to patients in this sample. Of this total, it was learned that at least 16 persons could not have been expected to respond to the questionnaire. Some questionnaires were returned to the hospital as undeliverable. During the follow-up telephone calls made by hospital staff, it was found that some patients had died after discharge while others had been confined to nursing homes or readmitted to a hospital. A few could not answer the survey due to blindness or inability to read English. For these reasons, no more than 392 persons could have been expected to fill out the questionnaires. Of these, 183 returned the questionnaire in time for it to be used in the research. These 183 returns represent 47% of the 392 persons who could respond to the questionnaire, or an effective response rate of 47%. Since some patients who did not return the questionnaire could not be reached for telephone follow-up, it is possible that other patients never received, or could not have been expected to fill out the questionnaire, so that the effective response rate can be considered a minimum.

The second sample was composed of patients discharged between August and September 22, 1979. A total of 322 questionnaires were
mailed to patients in this sample. Here again, it was found that 14 persons were unable to complete the questionnaire. A total of 173 persons returned their questionnaires in time, yielding an effective response rate of 54%.

The third sample consisted of patients discharged between January 1 and January 27, 1980. In this sample, a total of 340 former patients were mailed the questionnaire. Of these, 14 patients were unable to complete the questionnaire. A total of 207 replies were received in time, yielding an effective response rate of 63%.

Table 3 presents the number of patients sampled, the number of surveys returned, the number of patients unable to fill out the survey, and the effective response rate for each of the three samples.

**Level of Error in Patient Responses**

The level of error or bias in patient responses was measured in several ways. First, error was detected by examining patient answers to questions about the closed circuit television system before it was available to patients. Second, two less rigorous comparisons were made between patient responses to the questionnaire and other data collected from or about patients. One comparison consisted of a contrast between patients' estimates of waiting time in admitting and data collected by admitting staff. The second comparison consisted of a contrast between responses to the patient questionnaire regarding use and knowledge of closed circuit television and responses to these questions gathered during interviews with patients.

**Error in responses regarding closed circuit television.** It was possible to calculate the number of persons in the first and second
Table 3

Number in Samples and Effective Response Rate for the Three Samples of Patients

<table>
<thead>
<tr>
<th>Time of Discharge</th>
<th>Number Sampled</th>
<th>Number Returned on Time</th>
<th>Minimum Number Unable to Complete Questionnaire</th>
<th>Effective Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>May/June</td>
<td>408</td>
<td>183</td>
<td>16</td>
<td>47%</td>
</tr>
<tr>
<td>August/September</td>
<td>332</td>
<td>173</td>
<td>14</td>
<td>54%</td>
</tr>
<tr>
<td>January</td>
<td>340</td>
<td>207</td>
<td>14</td>
<td>63%</td>
</tr>
</tbody>
</table>
samples who gave incorrect responses to two items regarding the closed circuit television system for health education. The system had not been installed when the first and second questionnaire mailings were made, nevertheless the questionnaire included questions about the system in these mailings as well as in the January mailing. The correct response to the question about whether patients had heard of the system was "no," while the correct response to the question about whether they had seen any programs on the system could be either "no," "does not apply," or blank.

Table 4 provides the number and percentages of patients in the first and second samples who gave correct and incorrect answers regarding whether they had heard of the closed circuit television system. As can be seen, a moderately high percentage of patients answered correctly that they had not heard of the system, 76% for each sample. Between 9 and 13 percent of each sample incorrectly answered "yes" or "unsure" to this question. Another 11 or 16 percent of the responses are difficult to interpret because either the patient left the question blank, or indicated that the question did not apply.

The number and percentages of correct and incorrect responses to the question about use of the closed circuit system are given in Table 5. In this case, only 5 or 6 percent of the patients in each sample responded "yes" or "unsure." All other answers, accounting for most of the responses, should be considered correct.

Comparison of staff and patient reports of waiting time. For this analysis, patient responses regarding waiting time in admitting were compared to data collected by staff. The information from the
Table 4

Number and Percentage of Patients Responding Correctly or Incorrectly to the Question Regarding Knowledge of the Closed Circuit Television System

<table>
<thead>
<tr>
<th>Responses Regarding Knowledge</th>
<th>May/June</th>
<th>August/September</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Correct No</td>
<td>139</td>
<td>76%</td>
</tr>
<tr>
<td>Incorrect Yes</td>
<td>13</td>
<td>7%</td>
</tr>
<tr>
<td>Unsure</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>Difficult to Interpret</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blank</td>
<td>23</td>
<td>13%</td>
</tr>
<tr>
<td>Does Not Apply</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 5

Number and Percentage of Patients Responding Correctly or Incorrectly to the Question Regarding Use of the Closed Circuit Television System

<table>
<thead>
<tr>
<th>Response Regarding Use</th>
<th>May/June</th>
<th>August/September</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct</td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>No, Does Not Apply or Blank</td>
<td>152</td>
<td>95%</td>
</tr>
<tr>
<td>Incorrect</td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>Unsure</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>100%</td>
</tr>
</tbody>
</table>
admitting staff regarding patient waiting time was collected for 10 days in September, 1979. Patients gave their names to a receptionist as they arrived in the waiting area of admitting, and the receptionist indicated the time of arrival on the patients' papers. At the beginning of the admission interview, the admitting staff member again noted the time. These two times were compared to give the number of minutes the patient spent waiting. Waiting times of maternity patients were not recorded because the extent of their wait is under control of the emergency room personnel evaluating the patient rather than the control of the admitting personnel.

Patients from the August-September sample who responded to the patient questionnaire were asked to indicate how much time they had spent waiting in admitting by circling one of five different time categories from "no wait" to "more than one hour." Answers from maternity patients were deleted to make the sample comparable to that collected by admitting personnel. Approximately 40% of all respondents either failed to answer this question or indicated that it did not apply. This is not surprising however since a large number of patients are admitted through the Emergency Room, and for these patients, the question was not applicable.

Table 6 indicates the number and percentage of patients or staff reporting each category of waiting time. As can be seen, patients tended to overestimate waiting time as compared to staff reports. While 50% of patients reported waiting less than 15 minutes, 63% of the waiting times recorded by admitting staff fell in this category. The statistical analysis indicated that the difference between the
Table 6

Number and Percentage of Patients in Each Time Category as Reported by Staff and Patients

<table>
<thead>
<tr>
<th>Waiting Time</th>
<th>Staff</th>
<th>Patients (August/September)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>0-15 Minutes</td>
<td>122</td>
<td>63%</td>
</tr>
<tr>
<td>15-30 Minutes</td>
<td>47</td>
<td>24%</td>
</tr>
<tr>
<td>Over 30 Minutes</td>
<td>25</td>
<td>13%</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>100%</td>
</tr>
</tbody>
</table>

\[ \chi^2 (2) = 5.06, \ p < .10 \]
two groups approaches significance \( \chi^2 (2) = 5.06, p < .10 \). These results indicate that patient responses to this question contain some error, because if responses were error-free, only slight differences between staff and patient reports of waiting time would be expected.

Comparison of patient responses on questionnaire and during interview regarding knowledge and use of closed circuit television.

Data obtained from patients in the January sample regarding knowledge and use of closed circuit television were compared to data obtained during interviews with 40 inpatients. Inpatients who had been hospitalized for at least 24 hours were interviewed regarding closed circuit television by a staff researcher of the hospital. Among the questions asked of these patients was one about whether the patients were aware of the existence of the health education channel. One of the other questions asked was whether they had seen any programs on that channel.

The questionnaire sent out to patients discharged in January, 1980, contained three questions about the closed circuit television system. One of them asked about whether patients had heard of the system, and another asked whether the patient had actually seen any program on closed circuit television. To allow the most accurate comparison between these two sources of data, only "yes" and "no" responses from each group were analyzed.

The results of this comparison indicated that responses to the questionnaire were similar to those obtained during interviews in the hospital. Table 7 indicates the numbers and proportions of "yes" responses to questions about knowledge and use of the closed circuit
Table 7
Number and Percentage of Patients Responding "Yes" to Questions on Knowledge and Use of Closed Circuit Television for Two Samples

<table>
<thead>
<tr>
<th>Item</th>
<th>Questionnaire</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number Yes</td>
<td>Number Respondents</td>
</tr>
<tr>
<td>Had Knowledge of</td>
<td>109</td>
<td>183</td>
</tr>
<tr>
<td>Closed Circuit TV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had Used Closed</td>
<td>41</td>
<td>167</td>
</tr>
<tr>
<td>Circuit TV</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
television system given to the interviewer or given on the questionnaire. These data were analyzed using a test of proportions (Wallis & Roberts, 1956). While 60% of those who answered the questionnaire indicated that they had heard of the system, 58% of those interviewed indicated this ($K = .06, p > .20$). Regarding use of the system, while 24% indicated on the questionnaire that they had used the system, 35% of those interviewed indicated this. However, this difference was not statistically significant ($K = 1.19, p > .20$). These analyses indicate that patient responses to the questionnaire were similar to those obtained from other patients during interviews.

**Sensitivity to Differences in Conditions**

Sensitivity to differences in conditions was assessed by testing managers' hypotheses about how certain conditions would affect patient responses to questionnaire items.

Differences between patients admitted on high and low discharge days regarding assessments of housekeeping and food service. The number of patients discharged or transferred varies greatly depending on the day of the week. Based on data from a 4-week period in January, 1979, an average of 80 patients per day were discharged or transferred on Tuesdays, Thursdays, Fridays, and Saturday, while only 60 patients per day were discharged or transferred on Sundays, Mondays or Wednesdays. It was expected that patients admitted on high discharge days would have more negative reactions to housekeeping than those admitted on low discharge days, and that day of admission would not be related to patients' opinions of food service.

The percentage of patients in the first sample who indicated
that they had "always" been satisfied with each aspect of housekeeping was calculated for those admitted on high and low discharge days. These percentages and the numbers of patients in each group responding to each item are given in Table 8. For every item, patients admitted on low discharge days were more satisfied than patients admitted on high discharge days. Because the differences on any one item are small and because these patient answers are correlated with each other, an analysis involving all items in one statistical test (Posavac & Carey, 1978) was utilized. This analysis indicated that, as expected, patients admitted on low discharge days were more satisfied with housekeeping than patients admitted on high discharge days ($z = 3.47$, $p < .001$). Patients who indicated the question did not apply or who left it blank were not included in these analyses.

It was also predicted that day of admission would be unrelated to patient responses on food service items. If patients admitted on high and low discharge days do not differ even though they did differ regarding housekeeping, it suggests that patients' feelings about one aspect of their care do not determine their evaluations of other aspects of care. Table 9 presents the percentages of patients admitted on high and low discharge days who responded "always" to the five items regarding food service. In three cases, patients admitted on high discharge days were less satisfied, but in two cases they were more satisfied than those admitted on low discharge days. The analysis of these data revealed no differences in satisfaction between patients admitted on high and low discharge days ($z = .88$, $p > .20$).

These two analyses confirmed the predictions of the manager of
<table>
<thead>
<tr>
<th>Items</th>
<th>Total Number of Respondents</th>
<th>Percent</th>
<th>Total Number of Respondents</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housekeepers Friendly</td>
<td>81</td>
<td>67%</td>
<td>64</td>
<td>83%</td>
</tr>
<tr>
<td>Room Clean</td>
<td>84</td>
<td>56%</td>
<td>67</td>
<td>73%</td>
</tr>
<tr>
<td>Floor/Carpet Clean</td>
<td>82</td>
<td>59%</td>
<td>66</td>
<td>70%</td>
</tr>
<tr>
<td>Bathroom Clean</td>
<td>82</td>
<td>60%</td>
<td>67</td>
<td>70%</td>
</tr>
<tr>
<td>Furniture Clean</td>
<td>81</td>
<td>67%</td>
<td>65</td>
<td>74%</td>
</tr>
<tr>
<td>Tub/Shower Clean</td>
<td>69</td>
<td>57%</td>
<td>50</td>
<td>58%</td>
</tr>
<tr>
<td>Halls/Public Areas Clean</td>
<td>81</td>
<td>78%</td>
<td>66</td>
<td>85%</td>
</tr>
<tr>
<td>Items</td>
<td>Total Number of Respondents</td>
<td>Percent</td>
<td>Total Number of Respondents</td>
<td>Percent</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------</td>
<td>---------</td>
<td>----------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Food Temperatures Acceptable</td>
<td>91</td>
<td>58%</td>
<td>60</td>
<td>37%</td>
</tr>
<tr>
<td>Food Flavorful</td>
<td>82</td>
<td>41%</td>
<td>59</td>
<td>37%</td>
</tr>
<tr>
<td>Snacks Available</td>
<td>75</td>
<td>49%</td>
<td>57</td>
<td>61%</td>
</tr>
<tr>
<td>Received Items Selected</td>
<td>79</td>
<td>68%</td>
<td>60</td>
<td>78%</td>
</tr>
<tr>
<td>Food/Tray Inviting</td>
<td>75</td>
<td>59%</td>
<td>64</td>
<td>62%</td>
</tr>
</tbody>
</table>

Table 9

Percentage of Respondents Indicating Satisfaction With Food Service and Number Admitted on High and Low Discharge Days

"Always" Responses of those Admitted on High Discharge Days | Low Discharge Days

<table>
<thead>
<tr>
<th>Items</th>
<th>Total Number of Respondents</th>
<th>Percent</th>
<th>Total Number of Respondents</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Temperatures Acceptable</td>
<td>91</td>
<td>58%</td>
<td>60</td>
<td>37%</td>
</tr>
<tr>
<td>Food Flavorful</td>
<td>82</td>
<td>41%</td>
<td>59</td>
<td>37%</td>
</tr>
<tr>
<td>Snacks Available</td>
<td>75</td>
<td>49%</td>
<td>57</td>
<td>61%</td>
</tr>
<tr>
<td>Received Items Selected</td>
<td>79</td>
<td>68%</td>
<td>60</td>
<td>78%</td>
</tr>
<tr>
<td>Food/Tray Inviting</td>
<td>75</td>
<td>59%</td>
<td>64</td>
<td>62%</td>
</tr>
</tbody>
</table>
housekeeping. They indicated that while patients' opinions of housekeeping were negatively affected by being admitted on days when many patients are being discharged, their opinions of food service were not affected. This suggests that patients do discriminate between good and poor housekeeping, while not letting these opinions affect their reaction to food service.

**Differences in waiting time reported by patients admitted on different days.** It was predicted that patients admitted on Sundays would differ from those admitted on other days regarding the amount of waiting time in admitting which they reported. Patient responses to the question regarding admitting time from the first two samples were divided by the day of the week admitted (either Sunday or other days). Again, maternity patients' responses were excluded from the analysis. It was found that patients did differ in their reports of waiting time, with patients admitted on Sundays being more likely to have experienced a long wait ($\chi^2 (2) = 6.2$, $p < .05$). As can be seen from Table 10, a lower proportion of patients admitted on Sundays reported being admitted in the shortest amount of time than of patients admitted on other days. Thus, the analysis confirmed the prediction that patients admitted on Sundays on the average report longer waiting times than those admitted on other days.

**Differences in responses to food service items by patients on general and modified diets.** It had been predicted that patients who had modified diets during their stay would report (a) being less satisfied with the flavor of their food and (b) receiving fewer of the items selected from the menu than patients on general diets. The
Table 10
Reported Waiting Time for Patients Admitted on Sundays and Other Days

<table>
<thead>
<tr>
<th>Waiting Time</th>
<th>Admitted Sunday</th>
<th>Admitted Other Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>0-15 Minutes</td>
<td>9</td>
<td>29%</td>
</tr>
<tr>
<td>15-45 Minutes</td>
<td>18</td>
<td>58%</td>
</tr>
<tr>
<td>Over 45 Minutes</td>
<td>4</td>
<td>13%</td>
</tr>
<tr>
<td>Totals</td>
<td>31</td>
<td>100%</td>
</tr>
</tbody>
</table>

χ²(2) = 6.20, p < .05
two groups were not expected to differ on the other food service items.

This prediction was tested using data from the first sample. The percentages of patients answering most favorably to these items in each diet group is given in Table 11. Patients on modified diets were significantly less satisfied about receiving the food items which they had selected from the menu than patients on general diets (K = 2.56, p < .01). Although persons on modified diets were less satisfied about food flavor than patients on general diets, this difference was not statistically significant (K = .39, p > .20). Differences between the two groups on items which were not expected to be related to type of diet were small and not statistically significant.

Sensitivity to Change

Sensitivity to change was assessed by measuring both the potential for change of patient responses and the actual amount of change in those responses after major hospital interventions.

Potential for change in patient responses. Potential for change in patients' responses was assessed by identifying the extent of positive bias in responses. All items using 5-point response scales were inspected to determine the percentages of respondents who chose the most favorable response option.

Respondents were asked for an overall evaluation of food services, housekeeping, nursing, admitting, and the hospital as a whole to be reported using 5-point scales, ranging from "excellent" to "very poor." Given the general nature of this type of question, it might
Table 11
Numbers and Percentages of Patients Responding Most Favorably to Food Service Items Contrasting General with Modified Diets

<table>
<thead>
<tr>
<th>Items</th>
<th>General Diet (N=93)</th>
<th>Modified Diet (N=65)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td><strong>Expected to Differ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Flavorful</td>
<td>41</td>
<td>44%</td>
</tr>
<tr>
<td>Received Items Selected</td>
<td>74</td>
<td>80%*</td>
</tr>
<tr>
<td><strong>Not Expected To Differ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Temperature</td>
<td>48</td>
<td>52%</td>
</tr>
<tr>
<td>Snacks Available</td>
<td>45</td>
<td>48%</td>
</tr>
<tr>
<td>Food/Tray Inviting</td>
<td>55</td>
<td>59%</td>
</tr>
<tr>
<td>Understood Diet</td>
<td>78</td>
<td>84%</td>
</tr>
<tr>
<td>Overall Rating Food Service</td>
<td>31</td>
<td>33%</td>
</tr>
</tbody>
</table>

*K = 2.56, p < .01*
be expected that the "excellent" category would be frequently selected by patients. In fact, however, the number of patients indicating that services were excellent ranged from 38% to 62% on the first sample, from 36% to 60% on the second sample, and from 37% to 62% on the third sample. Table 12 presents the percentages of patients responding "excellent" for each overall evaluation item in the three samples.

The level of favorable responses to specific items regarding nursing, food service and housekeeping was also assessed. For these items, responses ranged on a 5-point scale from "always" to "never" for each item. A favorable response could be either "always" or "never" depending on item wording.

Items relating specifically to food service were responded to most favorably by 42% to 72% of the sample in the first survey, 44% to 75% of the second sample, and 50% to 80% of the third sample. Table 13 presents percentages of patients giving the most favorable response for each food service item.

For nursing items with a 5-point response scale, the most favorable responses were chosen by 33% to 76% of the first sample, by 26% to 78% of the second sample, and by 35% to 79% of the third sample. Percentages of most favorable responses to nursing items are given in Table 14.

Finally, for housekeeping items, 59% to 80% of the first sample, 62% to 82% of the second sample, and 69% to 81% of the third sample chose the most favorable response. The percentages of patients responding most favorably to housekeeping items are given in Table 15.
Table 12
Percentage of Patients Responding "Excellent"
Regarding Hospital Services in the Three Samples

<table>
<thead>
<tr>
<th>Hospital Service</th>
<th>May/June</th>
<th>August/September</th>
<th>January</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions</td>
<td>45%</td>
<td>51%</td>
<td>55%</td>
</tr>
<tr>
<td>Food Service</td>
<td>43%</td>
<td>36%</td>
<td>37%</td>
</tr>
<tr>
<td>Housekeeping</td>
<td>38%</td>
<td>38%</td>
<td>42%</td>
</tr>
<tr>
<td>Nursing</td>
<td>61%</td>
<td>60%</td>
<td>62%</td>
</tr>
<tr>
<td>Overall Opinion of Hospital</td>
<td>62%</td>
<td>54%</td>
<td>58%</td>
</tr>
</tbody>
</table>
Table 13
Percentage of Patients Responding Most Favorably
Regarding Food Service in the Three Samples

<table>
<thead>
<tr>
<th>Food Service Item</th>
<th>May/June</th>
<th>August/September</th>
<th>January</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Temperatures Acceptable</td>
<td>52%</td>
<td>60%</td>
<td>56%</td>
</tr>
<tr>
<td>Food Flavorful</td>
<td>42%</td>
<td>44%</td>
<td>50%</td>
</tr>
<tr>
<td>Snacks Available</td>
<td>52%</td>
<td>59%</td>
<td>63%</td>
</tr>
<tr>
<td>Received Items Selected</td>
<td>72%</td>
<td>75%</td>
<td>80%</td>
</tr>
<tr>
<td>Tray Inviting</td>
<td>61%</td>
<td>65%</td>
<td>68%</td>
</tr>
</tbody>
</table>
### Table 14

Percentage of Patients Responding Most Favorably

Regarding Nursing in the Three Samples

<table>
<thead>
<tr>
<th>Nursing Item</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>May/June</td>
</tr>
<tr>
<td>Nurses Kind</td>
<td>69%</td>
</tr>
<tr>
<td>Things Within Reach</td>
<td>57%</td>
</tr>
<tr>
<td>Didn't Want More Information</td>
<td>33%</td>
</tr>
<tr>
<td>Nurses Knew What They Were Doing</td>
<td>68%</td>
</tr>
<tr>
<td>Nurses Called Me by Name</td>
<td>64%</td>
</tr>
<tr>
<td>Noise Didn't Bother Me</td>
<td>36%</td>
</tr>
<tr>
<td>Nurses Protected my Privacy</td>
<td>76%</td>
</tr>
<tr>
<td>Someone Available when I Wanted to Talk</td>
<td>49%</td>
</tr>
<tr>
<td>Call Button Answered Promptly</td>
<td>51%</td>
</tr>
<tr>
<td>Got Straight Answers to Questions</td>
<td>60%</td>
</tr>
<tr>
<td>Got Enough Rest</td>
<td>51%</td>
</tr>
<tr>
<td>Housekeeping Item</td>
<td>May/June</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Housekeepers Friendly and Courteous</td>
<td>74%</td>
</tr>
<tr>
<td>Room Clean</td>
<td>64%</td>
</tr>
<tr>
<td>Floor/Carpet Clean</td>
<td>63%</td>
</tr>
<tr>
<td>Bathroom Clean</td>
<td>66%</td>
</tr>
<tr>
<td>Furniture Clean</td>
<td>71%</td>
</tr>
<tr>
<td>Tub/Shower Clean</td>
<td>59%</td>
</tr>
<tr>
<td>Halls/Public Areas Clean</td>
<td>80%</td>
</tr>
</tbody>
</table>
for the three samples.

As can be seen from these tables, patient responses did not have as much bias as that usually found in the patient satisfaction studies reviewed earlier. The most favorable response category was used by more than 70% of respondents only 21 out of 84 possible times. It is also interesting to note that the level of satisfaction for the same item is fairly consistent across the three samples.

Change in responses regarding Primary Nursing following introduction of business cards. It was predicted that patient awareness of their Primary Nurses would increase on those units where business cards were introduced and would remain unchanged on units where cards were not introduced. Nurses on two Primary Nursing units were given business cards to distribute to their patients in August, and this intervention was terminated at the end of December. Three other primary nursing units did not receive business cards, and these were considered comparison units.

Patients in all three samples answered the question "Did you have a Primary Nurse?" The responses of patients to the question about having a Primary Nurse are presented in Table 16. The proportion of patients who responded that they had a Primary Nurse increased from 10% to 28% after business cards were introduced. This increase was not statistically significant however \( (K = .99, p > .20) \). In addition, the percentage of patients from comparison units who responded "yes" to the question about having a Primary Nurse is higher in all three samples than the percentage of patients on units where business cards were introduced \( (K = 3.96, p < .001) \). In the second
Table 16

Number and Percentage Responding "Yes" to Primary Nurse Question on Intervention and Comparison Units in the Three Samples

<table>
<thead>
<tr>
<th>Sample</th>
<th>&quot;Yes&quot; Responses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intervention Units</td>
<td>Comparison Units</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
</tr>
<tr>
<td>Before Intervention</td>
<td>2</td>
<td>10%*</td>
<td>13</td>
</tr>
<tr>
<td>During Intervention</td>
<td>5</td>
<td>28%</td>
<td>13</td>
</tr>
<tr>
<td>After Intervention</td>
<td>5</td>
<td>23%</td>
<td>15</td>
</tr>
</tbody>
</table>

*K = 3.96, p < .001
or intervention sample, the proportion of "yes" responses from patients on intervention and comparison units did not differ statistically \( (K = 1.06, p > .20) \), while in the first sample it did.

These results suggest both that the business card intervention had no noticeable effect on patient responses and that the nurses on the intervention units were being much less frequently identified as Primary Nurses even before the intervention occurred. Units had not been selected to receive the intervention on the basis of greatest need, but rather so that intervention and comparison units would have comparable numbers of patients.

**Change in waiting time responses after the addition of personnel in admitting.** It had been predicted that patients admitted after the addition of personnel to the admitting staff would report lower waiting times than those admitted before this change. This prediction was tested by comparing the amount of waiting time reported in August/September, 1979, before the addition of personnel, to the amount of time reported in January, 1980, again deleting those patients from the maternity unit, since their waits were not dependent on the number of personnel available.

The results of this analysis indicated that there were no differences in reported waiting times between patients discharged in September and those discharged in January. Table 17 presents the number and percentage of patients reporting each waiting time category. The percentages of patients reporting each category are virtually identical for the two samples, and this is borne out by the statistical analysis \( (\chi^2 (2) = .01, p > .20) \).
Table 17

Number and Percentage of Patients Reporting Various Waiting Times Before and After Addition of Personnel in Admitting

<table>
<thead>
<tr>
<th>Waiting Time</th>
<th>August/September</th>
<th></th>
<th></th>
<th>January</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>15 Minutes</td>
<td>44</td>
<td>50%</td>
<td></td>
<td>56</td>
<td>52%</td>
</tr>
<tr>
<td>15-30 Minutes</td>
<td>26</td>
<td>30%</td>
<td></td>
<td>30</td>
<td>28%</td>
</tr>
<tr>
<td>Over 30 Minutes</td>
<td>18</td>
<td>20%</td>
<td></td>
<td>21</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>88</td>
<td>100%</td>
<td></td>
<td>107</td>
<td>100%</td>
</tr>
</tbody>
</table>
Change in patient satisfaction with admitting following a change in furniture arrangements. It was expected that certain changes made in admitting during August, 1979 would have a positive effect on patients' evaluations of service. This hypothesis was tested by analyzing differences in overall satisfaction with admitting between patients in the first and second samples. It was expected that respondents from the second sample would show greater satisfaction than respondents from the first sample. Although patients' overall satisfaction with admitting improved somewhat, from 45% to 51% indicating that admitting was "excellent," this difference did not reach statistical significance \((K = 1.04, p > .20)\).

The effect of installing closed circuit television for patient education. It was predicted that the installation of closed circuit television programming would be followed by a substantial increase in the number of patients who reported having heard of and used the closed circuit television system for patient education. This hypothesis was tested by comparing data from the August/September and January samples, since the closed circuit television system was installed in November. The number of patients reporting that they had heard of the closed circuit television system increased sharply in January as compared to the September sample, while the number saying that they had not heard of the system fell sharply. As can be seen in Table 18, before the installation of the closed circuit television system, 21 patients, or 12% of the sample indicated that they had heard of the system, while 109 patients or 53% of the sample reported having heard of the system after its installation. Conversely, the
Table 18

Number and Percentage of Patients Reporting That They had Heard of Closed Circuit Television Before and After its Installation

| Heard of Closed Circuit TV | August/September | | January | |
|----------------------------|------------------|------------------|------------------|
|                            | Number | Percent | Number | Percent |
| Yes                        | 21     | 12%     | 109    | 53%     |
| No                         | 131    | 76%     | 74     | 36%     |
| Unsure                     | 1      | 1%      | 8      | 4%      |
| DNA-Blank                  | 19     | 11%     | 16     | 7%      |
|                            | 172    | 100%    | 207    | 100%    |

\( \chi^2 (3) = 78.6, \ p < .001 \)
number of patients who indicated that they had not heard of the system dropped from 131 to 74, or from 76% to 36%. These differences were highly significant ($\chi^2 (3) = 78.6, p < .001$).

Results regarding use of the closed circuit television system also fulfilled predictions, although somewhat less dramatically. Table 19 presents the number and percentages of patients who reported using the system both before and after installation. While 5% reported using it before installation, 20% reported using it after installation. The number of patients indicating that the question did not apply or leaving it blank also decreased markedly from 39% to 17%. The differences were highly significant ($\chi^2 (3) = 29.4, p < .001$).

**Summary of Results**

**Return rate.** The return rate ranged from 47% to 63% for the three samples.

**Accuracy of questionnaire responses.** Although patient responses are not entirely error free, the levels of error detected in these analyses tended to be low.

While 9-13% answered incorrectly regarding their knowledge of the closed circuit television system before its installation, only 5-6% incorrectly responded regarding their use of the system.

A difference approaching significance was reported between staff and patient reports of waiting time, although no difference had been expected.

Comparing data from questionnaires and that gathered from an interviewer, reports about patient interaction with the closed circuit television system after its installation were similar, as expected.
Table 19
Number and Percentage of Patients Reporting That They Had Used
Closed Circuit Television Before and After its Installation

<table>
<thead>
<tr>
<th>Used Closed Circuit TV</th>
<th>August/September</th>
<th>January</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Yes</td>
<td>9</td>
<td>5%</td>
</tr>
<tr>
<td>Unsure</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>No</td>
<td>95</td>
<td>55%</td>
</tr>
<tr>
<td>DNA-Blank</td>
<td>67</td>
<td>39%</td>
</tr>
</tbody>
</table>

\[ \chi^2 (3) = 29.4, \ p < .001 \]
Sensitivity of questionnaire responses to differences in hospital conditions. In most cases, predictions were confirmed. As expected, patients admitted on low discharge days were more satisfied with housekeeping than those admitted on high discharge days while day of admission was unrelated to patients' evaluations of food service.

As expected, patients admitted on Sundays reported waiting longer in admitting than patients admitted on other days.

Partially fulfilling the hypothesis, patients on modified diets reported being less likely to receive the items they had asked for, although they did not differ from patients on general diets regarding their evaluations of food flavor. As expected, other food service items were not evaluated differently by the two groups.

These results reinforce the validity of patient responses by indicating that differences in hospital conditions are detectable in patient answers.

Sensitivity of questionnaire responses to changes in hospital conditions. While it was shown that most items have fair potential for improvement in patient responses, most of the interventions which were hypothesized to have an effect on patient responses did not have any effect, although one had a powerful effect.

Of the 84 possible instances in which patients in different samples responded to items with 5-point scales, only in 21 cases did more than 70% of the patients choose the most favorable response category for their responses.

The intervention in which nurses on Primary Nursing units were
given business cards did not have a significant effect on patient re-
response to the question about Primary Nursing. A marked difference
was seen between patients on comparison and intervention units, such
that patients on intervention units were significantly less likely to
say they had a Primary Nurse.

Changes in the arrangement of furniture and the decor of the
admitting area did not have the expected positive impact on the re-
sponses of patients regarding their overall satisfaction with admit-
ting.

The addition of personnel in admitting did not result in the
expected reduction of reported waiting time by patients.

After the installation of closed circuit television, more pa-
tients reported having heard of the system and having used the system
than before the installation of the system as expected, and these
differences were highly significant.

These results indicate that patient responses do change when a
major intervention occurs in the hospital, but that some other, less
noticeable changes may not be measurable using patient responses.
Patient feedback could allow service providers to measure the quality of many hospital services because such feedback has met the requirements set here for use by administrators: low levels of error, sensitivity to differences in conditions, and sensitivity to change. Error levels ranged from 5% to 13% in responses to the questions about closed circuit television. Of course, the existence of error in responses indicates that administrators should be cautious when interpreting data. Although one of the items expected to discriminate between people on modified and general diets did not do so, all other predictions regarding differences in conditions were fulfilled, suggesting that real differences do exist between the conditions experienced by certain patients and that patient responses reflect those differences. The assessments regarding sensitivity to change indicated that one intervention, the introduction of closed circuit television, did produce a reliable change in patient responses, so the reasons for the lack of change after other interventions are open to discussion.

The reasons for error and low sensitivity to change indicated in these results deserve careful attention. The sources of error in patients' responses are numerous. Since some of these sources of error will cause responses to be skewed in a particular direction, these errors could have important effects on responses which administrators
should understand. It is also important to explore the possible reasons for the failure of the interventions or their lack of impact on patient responses. The data from this study suggest that only interventions with major impact will successfully alter patient responses to this type of questionnaire.

Sources of Error

The possible sources of error in questionnaire responses are discussed below. As will be seen the process of experiencing an event and answering questions about it is complex, and errors may occur at many points in this process.

One source of error in patient responses is the misperception of events. When responding to the questionnaire, patients must indicate the frequency with which certain events occurred, as well as the existence or non-existence of a variety of services or conditions. It is possible that at the time some services occurred, patients failed to perceive them or misperceived them due to medications, anxiety, pain, or illness. These problems in perception cause "inaccurate" responses on a patient questionnaire.

Patients may also have poor memory for an event. They may be more prone to remember the one outstandingly bad meal or the exceptionally friendly housekeeper, so that their response might reflect an unusual condition rather than most of their experiences. Poor memory and misperceptions would probably occur in a random way, however, making them less of a threat to the interpretation of results, since errors would tend to cancel themselves out when the sample is large enough.
It is possible that certain patients will simply have difficulty understanding some questions. Long questions or those with difficult vocabulary were avoided where possible because of this problem. However, on the question regarding waiting time in admitting, informal documentation exists suggesting that the question has been misunderstood by patients. The question requires patients to indicate how long they spent waiting before being attended by admitting personnel. However, admitting administrators have found that some patients are responding that they waited a long time and then specifically complaining about the delay before getting to their rooms caused by the necessity for lab tests. Lab tests are given after the patient has left admitting and the time involved should not be included in their answers regarding waiting time. It is also possible that patients are including the time they actually spend with admitting personnel (about 15 minutes) in their estimates of waiting time. These distorted answers would tend to raise reported waiting time and make it unreliable since only some patients will confuse these times. The results of this study indicate that patients reported longer waiting times than those reported by staff. Of course, staff reports may also be biased toward lower waiting times since lower waiting times improve the staff’s image.

Social desirability refers to the tendency for persons to want to give a favorable picture of themselves. This tendency can affect both the sensitivity to change and level of error in patient responses. Patients may be unwilling to appear ungrateful by reporting dissatisfaction with the health care services they have received. Social
desirability may also be a problem where patients want to appear to know about and have participated in activities even if they have not done so. That last point is illustrated well by the errors in response to questions about the closed circuit television system before its installation. A higher percentage of persons responded that they knew about the system than responded that they had used it. Patients may have felt that they should have heard of this system, making social desirability a strong potential source of error in responses to this question, but less likely as a source of error in answers regarding use of the system. It is probably true that whenever a question is asked about the existence or use of some service, a certain proportion of patients will reply affirmatively reasoning that they must have had that service since a question was asked about it, but have just forgotten.

Acquiescent response set refers to the tendency of respondents to agree with statements regardless of their content. In patient satisfaction questionnaires, this response set has been found to be greatest for low income, low education groups, and it may pose a serious problem in terms of the validity of patient responses to single items (Ware, 1978). This type of bias is responsible for ceiling effects. In this case, it becomes more difficult to measure the impact of an intervention because patient response to positively worded items is inflated before the intervention occurs. Ware has suggested that the use of scales, balanced with respect to the number of positively and negatively worded items, would be preferable to the use of single items to avoid inaccuracy due to acquiescent response
set. The use of scales is helpful when satisfaction is being measured as a construct, as Ware measures it, however administrators are often concerned with the responses of patients to a single item. When evaluating patient responses to single items, acquiescent response set must be assumed to occur, so that evaluation of responses over time is helpful for clearer interpretation of results.

Random error is that due to mistakes, such as items being misunderstood, errors being made by the keypunch personnel, etc. These errors are bothersome, but are an unavoidable part of data collection using questionnaires. Since these errors are random by definition, they should cancel each other out, given a large enough sample.

Although the error level in this patient questionnaire does not appear to be exceptionally high, special care will be required by administrators who plan to use patient responses. Results of those questions that lend themselves to bias or misunderstanding should be viewed over time to assure greater accuracy of interpretation.

Reasons for Low Sensitivity to Change of Patient Responses

A discussion of the reasons for low power of experimental tests can help to clarify the reasons for the apparent lack of sensitivity to change of some patient questionnaire items. Power refers to the likelihood of detecting real differences between groups. In the field of evaluation, researchers have discovered that interventions that appeared promising when tested in the laboratory often proved disappointing when field tested. Rather than being due to some intrinsic problem with the intervention, often variables unique to the field test are lowering the likelihood that the intervention will produce
significant changes. A discussion of power has relevance to the research described here, because in the tests of sensitivity to change patient responses should have been different before and after the intervention. Three sources of low power (Boruch & Gomez, 1970; Crane, 1973) are especially important in explaining the apparent lack of impact that these interventions had: (a) small sample size, (b) partial irrelevance of the response variables, and (c) degradation of the treatment variable.

If only a small number of persons receive an intervention, it is difficult to measure a significant change due to treatment. This issue is a serious problem if administrators would like to measure the effects of changes at the unit level. The Primary Nursing intervention was carried out on two units, so that the amount of change needed to measure a significant change was greater than if more units had been included. Since administrators will often be concerned about changing conditions on a particular unit, it might be helpful for larger samples to be drawn from those units both before and for several times after an intervention.

When a clear linkage does not exist between the desired change in the dependent variable and the treatment being utilized, the problem is partial irrelevance of the response variable. In this case, a treatment is less likely to show the desired results, because the impact is not being adequately measured. A lack of relevance of the response variable may in fact be responsible for the lack of change in patient responses following the change in furniture in admitting. There is no clear reason why rearranging furniture should have affected
patients' overall ratings of satisfaction, and to adequately measure
the impact of such an intervention, patients should have been asked a
more specific question about their reaction to the furniture arrange­
ments in admitting or their assessment of the physical environment in
admitting.

The degradation of the theory when put into practice is one
aspect of degradation of the treatment variable. Each intervention
can be seen as a theory which must be translated into action. When
the action does not accurately reflect the theory, impact of the
intervention usually decreases.

Theory suggested that more personnel in admitting would mean
lower waiting time for patients, because more personnel can serve more
patients faster. However, there are essential elements in this process
which must occur before lower waiting time will be achieved. Specifi­
cally, personnel must be so well trained that their addition really
means shorter waiting times for patients. When personnel take longer
or make mistakes because they are unfamiliar with their job, they may
not have the desired impact. In this case, the long term impact of
the addition of personnel would be important to measure, because if
additional personnel do not lower waiting times after several months,
then the addition of such personnel is not cost-effective given that
no increase in patient load has occurred. In this example it should
be remembered that errors in patient responses may be frequent. A
comparison of patient and staff data over time seems advisable to
assure that waiting times are declining after the addition of person­
nel.
The Primary Nursing intervention provides another example of degradation of the treatment variable. In this case, treatment could be given best when staffing was adequate, because only then would patients really have a Primary Nurse. An analysis of the staffing patterns of the two units on which the intervention occurred indicated that during the six weeks when patients in the second or intervention sample would be most likely to have been in the hospital, the number of nurses was below the established staffing requirements or float personnel were being used 69% of the time on the intervention units. This suggests that many patients on these Primary Nursing units indeed may not have had a Primary Nurse. Since the treatment could not be properly implemented in this case, the absence of impact of the intervention is not surprising.

Degradation of the treatment variable also occurs in that each client perceives treatment in a slightly different way due to the interaction of characteristics of treatment providers and recipients. When this occurs, the effects of treatment will vary somewhat with each individual. This issue is best exemplified by the Primary Nursing intervention. Patients who were sicker and less alert would be less receptive to nurses' introduction and business cards. If sicker patients were concentrated in certain units, those units might show lower treatment effect than other units. This suggests that an effective intervention may not have equal impact with different recipients.

In summary, low power and inadequate implementation of the treatment are more plausible explanations for the lack of expected change following the interventions studied here than inadequacy of the patient
questionnaire. The most powerful intervention, that of installing the closed circuit television system, produced a marked impact on patient responses, indicating that changes in responses are detectable after the introduction of significant interventions. Also, results on tests of sensitivity to differences in conditions indicated that patient responses accurately discriminated between patients who had experienced differing conditions, while at the same time showing no differences between patients who should theoretically have shown no differences. These results suggest that the lack of change in patient responses following other interventions is most logically attributable to the type and strength of the interventions used, rather than to the instrument itself.

Practical Issues in Collecting Patient Feedback

Besides testing the accuracy of the data obtained from patients, the present research provided an indication of how patient data should be collected. Certain data collection issues, like the use of the computer, return rates for mailed questionnaires and cost deserve some comment here.

The hospital's computer was used in this study both in the sample selection and the data analysis phases of the research. A program was developed to randomly select patients from previously specified units in the hospital. Each patient name that had been randomly selected was stored in the computer with relevant demographic data from that individual. At the same time, three sets of mailing labels were printed by the computer, so that the questionnaire could be sent to each patient. Finally, a complete list of the patients selected was
printed with addresses and phone numbers, so that follow-up calls could be made to those patients who did not return their questionnaires on time.

For data analysis, patients responses were entered directly into the computer to be stored with the demographic data from that patient. Computer programs were designed so that once all data had been entered, tables could be generated that indicated the percentages of patients giving certain types of responses, and the percentages of patients from individual units giving certain types of responses. Tables were developed in close cooperation with service managers so that data relevant to their concerns would be available. A printout of the raw data for all patients by unit was also developed, so that other questions that might come up could be answered.

This extensive use of the computer for sample selection and data analysis has both advantages and disadvantages. The advantages lie mainly in the rapidity with which data could be collected, analyzed and presented to administrators who wished to use them. To randomly select a sample of 400 persons from a possible 1000 by hand or to develop and type up tables containing data from 200 respondents, even if the initial analyses are done by computer, quickly becomes a prohibitive task. However, the initial cost of developing the computer programs was also rather high. It was estimated that the development of the two computer programs would take 11 man-weeks of work on the part of specialized computer programmers. This initial investment, however, does save hundreds of dollars each time the feedback instrument is administered.
Return rate for mailed questionnaires is another issue deserving mention here. The return rate for this questionnaire improved from 47% to 63% during the time of this study. There is no obvious reason for the improvement between the first and second sample, since the procedure was basically the same. However, in the third sample, the questionnaire was mailed in an envelope, which meant that it would arrive looking better and would be less likely to be perceived as "junk mail" by the persons who received it. The rise in return rate suggests that the envelope probably had a positive effect on patient response rate.

With mailed questionnaires there is always some question about when data collection should occur. It is likely that patients forget information over time, suggesting that questionnaires should be sent out as soon as possible. However, patients may be sick soon after returning home from the hospital, making questionnaire completion a burden. Also, patients may be better able to focus on the most significant issues if they have had time to gain perspective on their experience. This is one area in which more research could clarify these issues.

Finally, a cost-benefit analysis of patient feedback collection is important. Even after the initial outlay for computer expertise, the collection of patient feedback still involves certain costs. It is estimated that the costs of printing the questionnaires, postage, and entering data in the computer would be approximately $170 for each sample of 400 patients. Computer time, although limited, should also be included under costs. The benefits of this type of data collection
are difficult to measure monetarily because they involve improved
decision-making abilities of administrators.

Several improvements in the conduct of patient feedback research
are suggested by this study. For one, adequate monitoring of inter­
ventions is essential. While a number of interventions reportedly
took place in the hospital in this study, it was impossible to know
whether these interventions occurred as expected, occurred in a some­
what different or diminished manner, or did not occur at all. For
example, the use of business cards should have been monitored to assure
that all nurses were using them, and using them as originally intended.
If it were found that the cards had no effect even though they were
being used correctly, then it would be clear that that particular in­
tervention did not have the intended effect on patient responses. If,however, the cards were not being used, the reasons for this problem
should be explored. Likewise, monitoring the increase in personnel
in admitting would have allowed an evaluation of the effectiveness of
new personnel and a quick identification of any difficulties they were
experiencing. In cases in which implementation involves long term
changes in people's behavior, as opposed to a one-time change in fur­
niture, for example, monitoring over a period of time is essential
in order to identify the level of implementation of the intervention
and any problems arising from it. Only after it has been documented
that an intervention is in place and functioning as expected can pa­
tient feedback be used to evaluate the effects of that intervention.

Another deficiency of the present study was the lack of evalua­
tion of medical care. Medical care is probably the most significant
part of the patient's experience in a hospital. Although few patients are capable of evaluating the accuracy of the diagnosis or appropriateness of treatment, nearly all patients are capable of judging whether they understood the information given, whether they felt they were treated brusquely, or whether the physician answered all their questions. However, physicians other than resident physicians are not employed directly by the hospital, and do not work solely on a particular unit. To be useful, the evaluation of medical care would best be limited to evaluation of the performance of resident physicians who are directly responsible to the hospital administrators. Although residents may feel threatened by patient evaluation of their services, patient responses are grouped by unit, so that the deficient performance of a particular physician cannot be identified, just as the deficient performance of a particular nurse cannot be identified from these data.

Possible Uses of the Patient Questionnaire Data

There are a number of potential uses to which data from a patient questionnaire can be put. Patient feedback could be used to reward staff for good performance, as a defense against individual complaints by patients, and as a way of promoting competition between units for improved performance. However, the most important function that patient responses can have is that of providing useful information for administrative decision making.

Marin (in press) has proposed that consumer opinions can be used both in the identification of problems in service delivery and in the evaluation of solutions to those problems. These two functions both
occur as part of a process of planned change. Planned change refers to a systematic, scientific way of introducing change and improvement into human service programs (Department of Health, Education, and Welfare, 1972; Fairweather & Tornatsky, 1977; Havelock, 1975; Lippit, Watson, & Westley, 1958; Rogers, Lin, & Zaltman, 1974; Watson, 1967; Wildavsky, 1972). The process of planned change generally consists of the following components: (a) perception of the need for change; (b) a search for solutions to the problem; (c) selection of the "best" solution; (d) solution implementation; (e) solution evaluation; and (f) depending on the results of this evaluation, either the cycle begins anew with problem perception or activity ends. Patient feedback could be used at two points in this process, at the point of problem perception and at the point of solution evaluation.

Data from the questionnaire studied here offer numerous opportunities for implementing a strategy of planned change. The Primary Nursing intervention used to measure sensitivity to change is a good illustration. Patient responses had indicated that Primary Nurses were not being identified properly, so the business card intervention was implemented. Since that intervention was ineffective initially either it should be implemented more efficiently, or a different intervention strategy should be sought to promote identification of Primary Nurses. In either case, patient responses would continue to serve as the measure of the effectiveness of the intervention.

The successful solution to a problem in housekeeping also illustrates the use of patient feedback in planned change (Posavac, Carey & Marin, in press). In this case, the director of housekeeping
discovered that patients from two units in the May/June sample were very dissatisfied with housekeeping. In order to solve this problem, the supervisors of highly rated and poorly rated units were switched, and one supervisor was eventually terminated. Patients' responses in January indicated that satisfaction with housekeeping had improved markedly, rising from 38% to 69% on one unit, and from 20% to 67% on the other unit. If improvement had not occurred, another strategy for changing patient ratings would have been sought, implemented and evaluated. In any case, patient ratings should continue to be monitored to assure that the problem has been solved permanently.

Finally, the Joint Commission on Accreditation of Hospitals requires the identification of problems and monitoring of corrective action in a systematic manner. The data collected from patients can be used for both of these important functions of quality assurance (Posavac, Carey & Marin, in press).

Conclusion

The patient questionnaire tested here can be used by administrators in the assessment of patient reactions to hospital services, because patient responses have been shown to be sufficiently accurate and sensitive for such use. Careful inspection of patterns of patient responses over time can allow administrators to detect problems in service delivery. Differences in conditions occurring in different areas of the hospital or occurring to different types of patients can be assessed. The effect of major interventions can be evaluated easily using patient responses and the impact of interventions over time can be determined. The instrument allows administrators to assess
the quality of services being received by patients as well as changes in those services that occur over time. Given the great many uses to which patient feedback information could be put, such information would benefit providers of a wide variety of human services.
Responses of hospital patients to a questionnaire about services were assessed to determine their accuracy, sensitivity to differences in conditions, and sensitivity to change. Accuracy was defined as low levels of error in patient responses, sensitivity to differences in conditions meant that patient responses should clearly differentiate between types of treatment actually received in the hospital, and sensitivity to change meant that patient responses should reflect the impact of known changes taking place in the hospital.

The instrument was developed and pretested in cooperation with the heads of nursing, housekeeping, admitting, and food service at a general, acute-care, teaching hospital. Items were based on goals of service which departments had established. The instrument allowed repeated collection of patient feedback about concrete aspects of services which administrators could control. Return rates between 47% and 63% were obtained for three mailings of between 332 and 408 questionnaires sent out at 3- to 4-month intervals to recently discharged patients.

Patient responses to these questionnaires were reasonably accurate. Only between 5% and 13% of the respondents reported use and knowledge of the closed circuit television system before the system went into operation. Answers about the closed circuit television system after installation given during patient interviews and given on the patient questionnaire were very similar. But staff and patients'
reports on the amount of time spent waiting in admitting disagreed somewhat.

Patient responses showed sensitivity to differences in conditions. As expected, patients admitted on days when the workload for housekeeping personnel was high were less satisfied with housekeeping than those admitted on days when the workload was lower. However, as expected, these two groups of patients did not differ in their assessments of food service items. Patients were expected to and did report waiting longer in admitting on Sunday than on other days. Patients who received modified or special diets reported being less likely to receive the items they had asked for, as expected, although unexpectedly they did not differ from those on general diets regarding their evaluations of food flavor.

Patient responses showed sensitivity to change only when the intervention was sufficiently powerful. Primary Nurses were provided with business cards in an attempt to heighten patient awareness of the Primary Nurse, but responses of patients from intervention units did not change. Changes in the arrangements of furniture and decor of the admitting area did not have the expected positive impact on questionnaire responses of patients regarding their overall satisfaction with admitting. Addition of personnel in admitting did not result in the expected reduction of reported waiting. But the installation of closed circuit television had a major impact on patient responses to questions about knowledge of and use of the system.

Although responses did not show sensitivity to change in several instances, this may be due to a lack of statistical power for measuring
the effects of the intervention and to poor implementation of the intervention rather than to an inherent lack of sensitivity of patient responses.

Patient responses were shown to be sufficiently accurate and sensitive that they could be used by administrators for problem identification and solution evaluation in the future.
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APPENDIX A
Lutheran General Hospital
PATIENT OPINIONNAIRE

Please read instructions carefully before you start.

Below you will find a number of questions about your stay at Lutheran General Hospital. Answer each of the questions by putting a circle around the number that indicates your opinion. If you wish to answer:

Always, circle 1
Often, circle 2
 Sometimes, circle 3
Seldom, circle 4
Never, circle 5

For example, if the question is "Was your stay at Lutheran General Hospital pleasant?" and you feel that it was most of the time, circle number 2, indicating often, but if you feel it usually was not, circle 4 or 5, indicating that it was seldom or never pleasant. Circle DNA if the question Does Not Apply or you don't know the answer.

Please be as honest as possible. Your answers will help us to improve our services. If you have been a patient at LGH before, please answer only about your most recent stay.

1. Was the nursing staff kind, supportive and patient? 1 2 3 4 5 DNA
2. Did nurses place things you needed within your reach? 1 2 3 4 5 DNA
3. Did you want more information from the nurses than you received? 1 2 3 4 5 DNA
4. Did nurses seem to know what they were doing? 1 2 3 4 5 DNA
5. Did nurses call you by name? 1 2 3 4 5 DNA
6. Did noise on the unit bother you? 1 2 3 4 5 DNA
7. Did the nurses respect and protect your privacy? 1 2 3 4 5 DNA
8. If you wanted to talk with someone, was someone available? 1 2 3 4 5 DNA
9. When you used your call button, were you answered promptly? 1 2 3 4 5 DNA
10. When you asked questions, did you get straightforward answers from the nurses? 1 2 3 4 5 DNA
11. Did you get enough rest? 1 2 3 4 5 DNA
   If you did not mark always, circle the reasons:
   1. being awakened for tests or treatment
   2. noise from hospital personnel
   3. noise from other patients
   4. noise in the halls
   5. pain
   6. lights
   7. TV or radio
   8. Other (explain) 1 2 3 4 5 DNA
12. Were the people who cleaned your room friendly and courteous? 1 2 3 4 5 DNA
13. Was your room cleaned to your satisfaction? 1 2 3 4 5 DNA
14. Was the floor or carpet of your room cleaned to your satisfaction? 1 2 3 4 5 DNA
15. Was your bathroom cleaned to your satisfaction? 1 2 3 4 5 DNA
16. Was your furniture cleaned to your satisfaction? 1 2 3 4 5 DNA
17. Were tub and shower rooms cleaned to your satisfaction? 1 2 3 4 5 DNA
18. Were the halls and public areas of the hospital neat and clean? 1 2 3 4 5 DNA
19. Were food temperatures acceptable? 1 2 3 4 5 DNA
20. Was the food flavorful? 1 2 3 4 5 DNA
21. Were snacks and beverages available at the time you wanted them?  
   | Always | Often | Sometimes | Seldom | Never | Does Not Apply |
   | 1 | 2 | 3 | 4 | 5 | DNA |
22. Did you receive the food items you selected from your menu?  
   | 1 | 2 | 3 | 4 | 5 | DNA |
23. Did the food and tray look inviting?  
   | 1 | 2 | 3 | 4 | 5 | DNA |

What food(s) did you like? ______________________ 
What food(s) did you dislike and why? _________________ 

Below you will find more questions about your hospital stay. To answer each question, circle the number that applies. 

24. When you were admitted to the hospital, who actually went through the admitting process?  
   1. You, the patient  
   2. A relative or someone else

   The next four questions are for the person who went through the admitting process: 

25. Did the admitting person spend enough time with you?  
   | Yes | Unsure | No | Does Not Apply |
   | 1 | 2 | 3 | DNA |
26. Did the admitting person treat you impersonally?  
   | 1 | 2 | 3 | DNA |
27. Did the admitting person take time to answer your questions?  
   | 1 | 2 | 3 | DNA |
28. How long did you wait in the admitting area? (select an answer below)  

   | Does not apply (admitting process took place in Emergency or in the patient's room) | 1 | 2 | 3 | DNA |
   | 1. No wait | 2. Waited less than 15 minutes | 3. 15 - 30 minutes | 4. 30 - 45 minutes | 5. 45 - 60 minutes | 6. More than an hour |
29. Before you entered the hospital, did you fill out a preadmission form at home?  
   | 1 | 2 | 3 | DNA |
30. Before you entered the hospital, did an admitting person call you at home and ask personal and insurance questions?  
   | 1 | 2 | 3 | DNA |
31. Was your room inspected for cleanliness by a supervisor during your stay?  
   | 1 | 2 | 3 | DNA |
32. Did you understand the type of diet you were on and the reason for it?  
   | 1 | 2 | 3 | DNA |
33. Did you ever have problems because hospital staff failed to communicate with each other?  
   | 1 | 2 | 3 | DNA |
   If yes, explain ______________________ 
34. Were family members kept informed by nursing staff during your hospitalization?  
   | 1 | 2 | 3 | DNA |
35. Did you have contact with your Patient Representative during or after your hospital stay?  
   | 1 | 2 | 3 | DNA |
36. Was there enough planning for your return home?  
   | 1 | 2 | 3 | DNA |
37. Did you know about the closed circuit TV health education programs?  
   | 1 | 2 | 3 | DNA |
   38. Did you view any of them?  
   | 1 | 2 | 3 | DNA |
   39. Did you find them helpful?  
   | 1 | 2 | 3 | DNA |
40. Time of day admitted:  
   1. Midnight-10 a.m.  
   2. 10 a.m.-3 p.m.  
   3. 3 p.m.-6 p.m.  
   4. 6 p.m.-midnight 
41. Day of week admitted:  
   1. Sunday  
   2. Monday  
   3. Tuesday  
   4. Wednesday  
   5. Thursday  
   6. Friday  
   7. Saturday 
42. Type of diet you had during most or all of your stay:  
   1. Had no special diet (green menu)  
   2. Had a special diet (any other color menu) 
43. Did you have a Primary Nurse?  
   1. Yes  
   2. Unsure  
   3. No 
44. Were you in the Intensive Care or Coronary Care unit during your stay?  
   1. Yes  
   2. No 
45. How many times were you moved from one room to another? ___
Indicate how much pain and anxiety you experienced while in the hospital, by circling the appropriate number on the following scale.

<table>
<thead>
<tr>
<th>46. My average level of pain</th>
<th>None or almost none</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extreme</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Substantial</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mild</td>
<td>2</td>
</tr>
<tr>
<td>47. My average level of anxiety</td>
<td>None or almost none</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Extreme</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Substantial</td>
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<tr>
<td></td>
<td>Moderate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mild</td>
<td>2</td>
</tr>
</tbody>
</table>

Indicate your evaluation of the following by circling the appropriate number. If you have not been hospitalized elsewhere, do not answer part b.

48. a. Food service at LGH
    b. Food service at other hospitals you have been in

49. a. Housekeeping at LGH
    b. Housekeeping at other hospitals you have been in

50. a. Admission at LGH
    b. Admissions at other hospitals you have been in

51. a. Nursing care at LGH
    b. Nursing care at other hospitals you have been in

52. a. Overall opinion of LGH
    b. Opinion of other hospitals you have been in

Comments or Suggestions:

THANK YOU.

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APPROVAL SHEET

The dissertation submitted by Barbara VanOss Marin has been read and approved by the following committee:

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The final copies have been examined by the director of this dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December 3, 1980

Date

[Signature]

Director's Signature