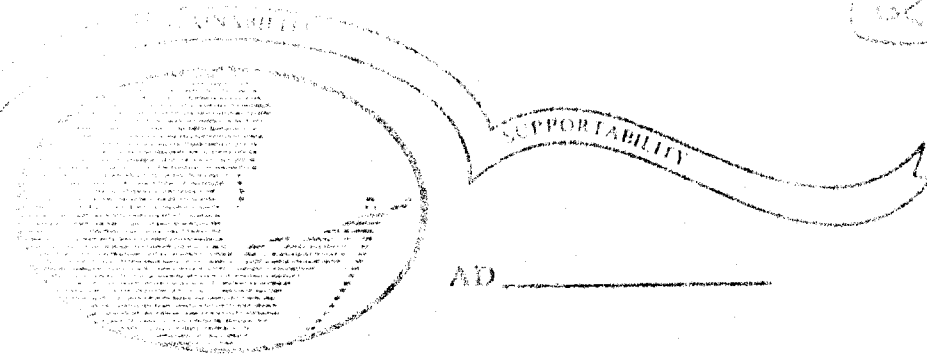


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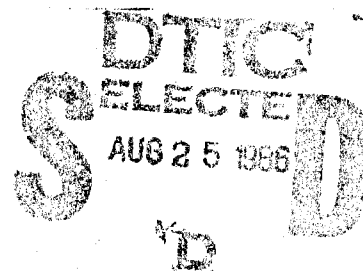
THE ACCEPTABILITY OF FOOD AND SERVICE AT FITZSIMONS ARMY MEDICAL CENTER UNDER MILITARY AND CONTRACT OPERATION

BY

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SEPTEMBER 1985

FINAL REPORT 1983-1985



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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) In order to compare the consumer acceptability of food and food service at Fitzsimons Army Medical Center under military and contracted operations, the authors conducted acceptability studies three months before and three and nine months after the conversion to contract food service. The data were analyzed by an analysis of variance or loglinear model. Results clearly showed a decrease in consumer acceptance by both patients and hospital staff under contracted food service operations.		

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PREFACE

The Food Engineering Laboratory (FEL) of the US Army Natick Research and Development Center (USANRDC) has given support under requirement USA 8-9 in developing a food service contract for use by U.S. Army procurement activities in contracting out the operation of government dining facilities. Project no. 728012.19000, Support to Hospital Food Service Contracting, required the measurement of the quality of food and food service of hospitals under commercial contracts.

A survey of nonmilitary hospitals was conducted to determine methods of measuring and monitoring food and food service quality in the civilian sector. It was determined that acceptability by the patients eating in their rooms and by patients and personnel eating in the dining halls was the most important criterion for judging both the quality of the food and food service. To compare the level of acceptability under military food service and contracted operations, acceptability surveys were conducted at the Fitzsimons Army Medical Center (FAMC) three months before and three and nine months after the food preparation and service were contracted to a private company. The results of these surveys are contained in this report.

The authors wish to thank Dr. Owen Maller and Dr. Armand Cardello for their assistance with survey forms. The assistance of Mr. Larry Digman in the statistical analyses of the data is greatly appreciated. The assistance of Mr. James Halkiotis in conducting the survey and Ms. Beth McCarthy, Ms. Maryann Graham, Ms. Sue Hunter, and Ms. Maryann Fitzgerald in compiling the data is also appreciated.

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THE ACCEPTABILITY OF FOOD AND FOOD SERVICE
AT FITZSIMONS ARMY MEDICAL CENTER
UNDER MILITARY AND COMMERCIAL CONTRACT OPERATION

INTRODUCTION

With the increase of contracted services by the government it becomes important to assure that the quality of services contracted out is maintained at an acceptable level. This is especially true in military feeding situations where much of the morale and performance of the military personnel depends upon the nourishment they receive. The feeding of injured and/or ill military personnel in hospital situations becomes even more critical in facilitating the quick recovery of the patients. Feeding the patient items that are not acceptable often results in food not being eaten and can prolong the recuperative time. A large portion of military hospital feeding also involves cafeteria or dining hall service. In military hospitals, patients are encouraged to eat in the dining hall if they are physically able to do so. The physical activity, the social interaction, and the change in atmosphere resulting from leaving one's hospital room to eat in a dining hall is beneficial in the recuperative phase of hospitalization and in raising the morale of long-term patients. Military personnel and civilian staff members also use the cafeteria facilities. Since food service is considered part of the soldiers' compensation, it is especially important for military personnel to have acceptable food wherever they may eat.

The US Army Natick Research and Development Center (NRDC) was tasked through Health Services Command to develop a Food Service Contract to be used when military services would be converted to a *commercial/industrial* activity. The contract contains a quality assurance inspection plan that describes the methods the government will use to evaluate the contractor's performance in meeting contract requirements. The inspection plan provides for systematic inspection of the food service operations and deductions for nonperformance. Assessing the level of acceptability of the food and food service from the consumer's viewpoint is difficult from quality assurance inspections alone. Under the contract hospital operation, the contractor uses the government's equipment, facilities, recipes, and food procurement systems. Therefore, the main variable is the service provided by the contractor. The objective of this study was to determine if the acceptability of the food and food service from the patient and cafeteria patron's viewpoint was maintained at the same level under a contract feeding operation as under military operation. Acceptability surveys were undertaken at Fitzsimons Army Medical Center (FAMC), the first military hospital to be converted to a contract operation.

METHODS

Three survey forms were adapted from Maller, Dubose and Cardello's¹ earlier surveys of patient and staff opinions of hospital food services. One form was designed for patients eating in the wards, one for ambulatory patients eating in the cafeteria and one for staff and other personnel eating in the cafeteria. Forms used are found in Appendix A.

Three months prior to the beginning of contract food service, two researchers from the Food Engineering Laboratory, NRDC, conducted the first phase of the survey. The survey forms were distributed to patients on both regular and modified diets who were physically able and willing to complete the questionnaire and to all cafeteria patrons consenting to fill out the forms. Forms were not distributed to pediatric patients, psychiatric patients, patients on liquid diets or patients in intensive care units. Survey forms were distributed over a four-day period, which included two breakfast meals, two noon time meals and two evening meals. The surveys were distributed to the entire population of ward and ambulatory patients with the exceptions mentioned above. The nonpatients eating in the cafeteria were asked to complete questionnaires only if they indicated that they had eaten an adequate number of meals to assess realistically the quality of the food and food service.

At intervals of three and nine months after the start of contracted food service operation the survey was repeated, using the same questionnaires, the same meal periods, and the same survey approach.

Table 1 shows the number of questionnaires completed by respondent groups in the three surveys, tabulated by the meals just finished by the respondents. Table 2 shows the mean number of meals eaten by ward, ambulatory and staff personnel in the weeks of the surveys. The patient questionnaires were distributed as evenly as possible over the three-meal period, but the staff questionnaires were distributed to a greater extent at the noon day meal to reflect the larger numbers and larger cross section of people eating in the cafeteria during this meal period.

The results from the three surveys were tabulated by percentage response to each question (Appendix B). Those questions reflecting the factors important to the consumers' impression of the quality of the food and food service were analyzed statistically to determine if significant differences existed between military food service and contracted food service. The methods of statistical analyses used depended upon the response scale of the individual questions. Most questions were answered on a linear one to five scale in which one usually equalled "very bad" and five equalled "very good". For some questions the scale on the questionnaire was transposed so that one equalled "very good" and five equalled "very bad". In the analyses of the data all scales for linear "bad to good" responses were transposed so that one equalled "very bad" and five equalled "very good". The results of these questions were analyzed by a one-way analysis of variance (ANOVA) and Duncan's Multiple Range Test to determine if significant differences ($p < 0.05$) existed between the military and the contracted operation.

The analysis of variance is a procedure for determining if significant differences exist between sample means; the Duncan's Multiple Range Test determines where the variability exists. Significant differences ($p \leq 0.05$) are depicted in the tables and figures by a change in letter designation. Thus, sample means having the same letter (a, b, etc.) are not significantly different from each other, whereas two samples with differing letters are statistically significantly different.

TABLE 1. Survey Forms Completed by Respondent Group

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months
Breakfast	37	39	19	20	15	16	105	35	71
Dinner	33	32	47	21	24	24	176	215	178
Supper	29	29	23	52	38	42	90	82	116
N.A.*	0	1	3	0	2	1	15	9	12
Total	99	101	92	93	79	83	386	341	377

*Did not answer the question "Which Meal Did You Just Finish Eating".

TABLE 2. Mean Number of Meals Served in Four Day Test Period by Respondent Group

	Ward Patients			Ambulatory Patients			Staff	
	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months	Pre-Contract	Post-Contract 3 Months
Breakfast	213	295*	276*	93	105	86	240	286
Dinner	233	295*	276*	175	160	143	460	502
Supper	230	295*	276*	149	124	116	262	242
Mean of Three Meals	225	295	276	139	130	115	320	343
								265

*Mean taken from total patient meals served per day.

The questions requiring a "yes" or "no" response were analyzed for significance by the Yates Z test.² The Yates Z test is used to determine significant differences between proportions samples from different populations. In this study the test is used to analyze the "yes-no" questions to determine if the proportions of "yes" answers are significantly different from one survey to another. For certain questions, as listed in Table 3, the most desirable response was not at either end of the five point scale but usually in the middle when the response was "just right". However, in some of these questions, the optimum response was not the middle value; for example, in the question for meat tenderness, "slightly tender" may be a more positive response than "neither tough nor tender" and preferable to "slightly tough". To analyze these questions a different approach was necessary. A fit of loglinear models³ was used to determine if the response was independent of the time of the response (before or after contract operation). Independence of response and time suggested that there were no differences between pre- and post-contract ratings. If there were an interaction between time and the response frequency, the responses were examined qualitatively to determine where differences existed. Interaction indicates that the variable, for example, the time the survey was taken and the rating scores, are not independent and that there is a relationship between these two variables. At a level of $p > .2$ the response frequency was considered independent of the time the survey was taken; from $p < .2 > .05$ there was considered a slight interaction between response frequency and survey time; and at $< .05$ there was a significant difference in response attributable to the time of the survey.

RESULTS

The percentage responses to all questions may be found in Appendix B. These show very close correlation in the demographic characteristics in all three surveys in age distribution, distribution of males and females, occupation of staff personnel, length of staff employment, number of days meals were eaten in the cafeteria, and current patient diet (regular or modified). In the nine-month survey a higher percentage of ambulatory patients had eaten for a shorter length of time in the cafeteria than in earlier surveys, and there was a slight decrease in ambulatory patients classified as "military" and an increase in dependents of retired military personnel.

The mean responses of these quality ratings answered on a linear one to five rating or with a "yes" or "no" response may be found in Appendix C. Figs. 1 to 8 graphically depict the mean responses. A change in letter designation indicates a significant difference at the $p < 0.05$ level of significance.

The mean ratings for the responses to the question, "What is your opinion of all the meals eaten in this hospital?" are depicted in Fig. 1. It can be seen that the ward patients' ratings were lower in the survey taken after three months of contract operation and were statistically significantly lower in the survey taken after nine months of the contract operation. The ambulatory patient responses were significantly lower after three months of contract operation, but rose in the nine month survey and at that time were not significantly different from the ratings under the military operation. The staff responses were significantly lower when surveyed at both periods under contracted food service administration than under the military administration.

TABLE 3. Question Analyzed for Loglinear Models

Tenderness of Meat

<u>Too Tough</u>	<u>Moderately Tough</u>	<u>Neither Tough Nor Tender</u>	<u>Moderately Tender</u>	<u>Too Tender</u>
1	2	3	4	5

Thoroughness of Cooking Vegetables

<u>Too Overcooked</u>	<u>Moderately Overcooked</u>	<u>Neither Overcooked nor Undercooked</u>	<u>Moderately Undercooked</u>	<u>Too Undercooked</u>
5	4	3	2	1

Seasoning of Food

<u>Too Bland</u>	<u>Moderately Bland</u>	<u>Just Right</u>	<u>Moderately Spicy</u>	<u>Too Spicy</u>
1	2	3	4	5

Size of Food Portions

<u>Too Large</u>	<u>Moderately Large</u>	<u>Just Right</u>	<u>Moderately Small</u>	<u>Too Small</u>
5	4	3	2	1

Variety of Items to Select

<u>Too Large</u>	<u>Moderately Large</u>	<u>Neither Large Nor Small</u>	<u>Moderately Small</u>	<u>Too Small</u>
5	4	3	2	1

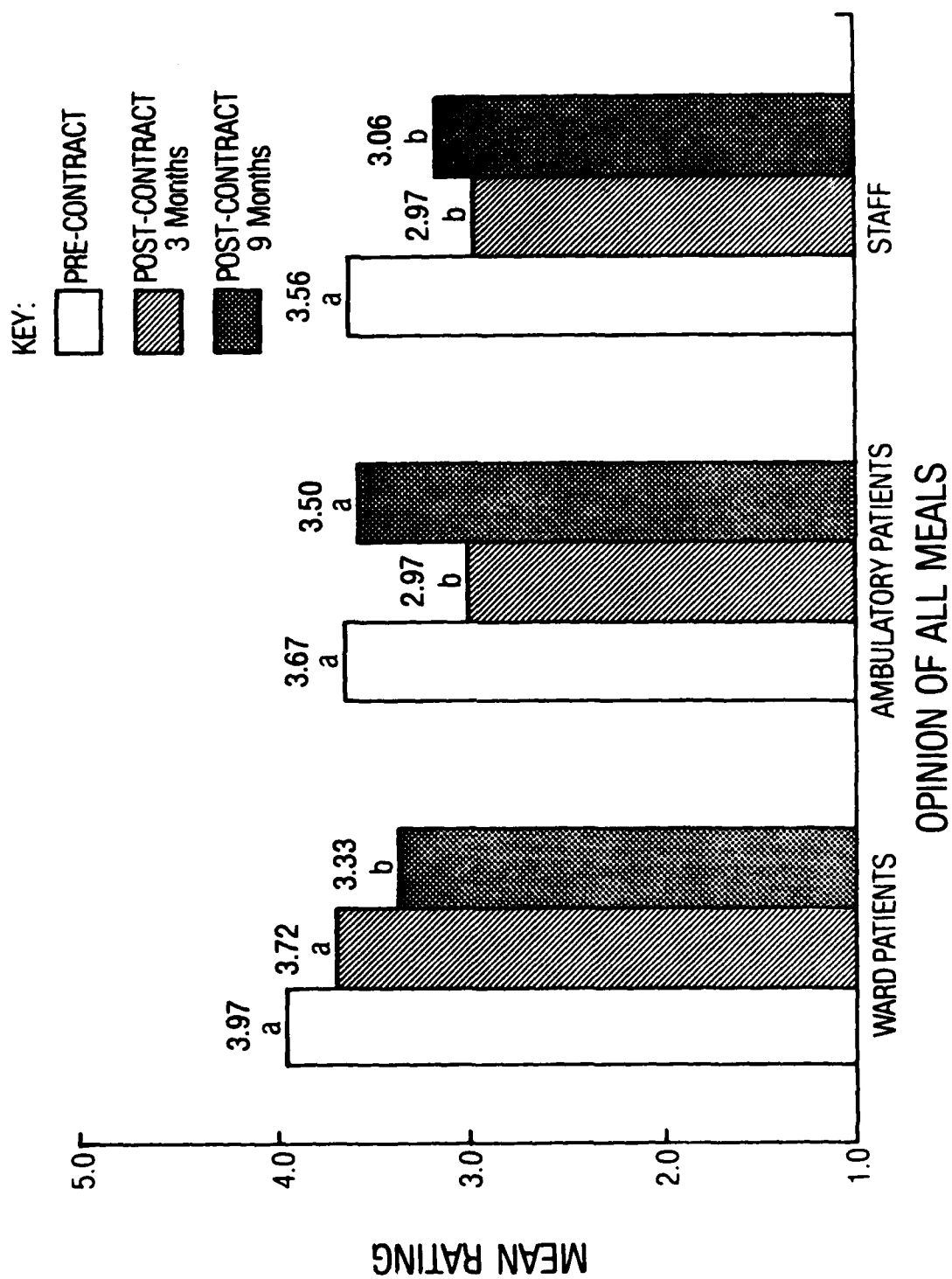


Figure 1

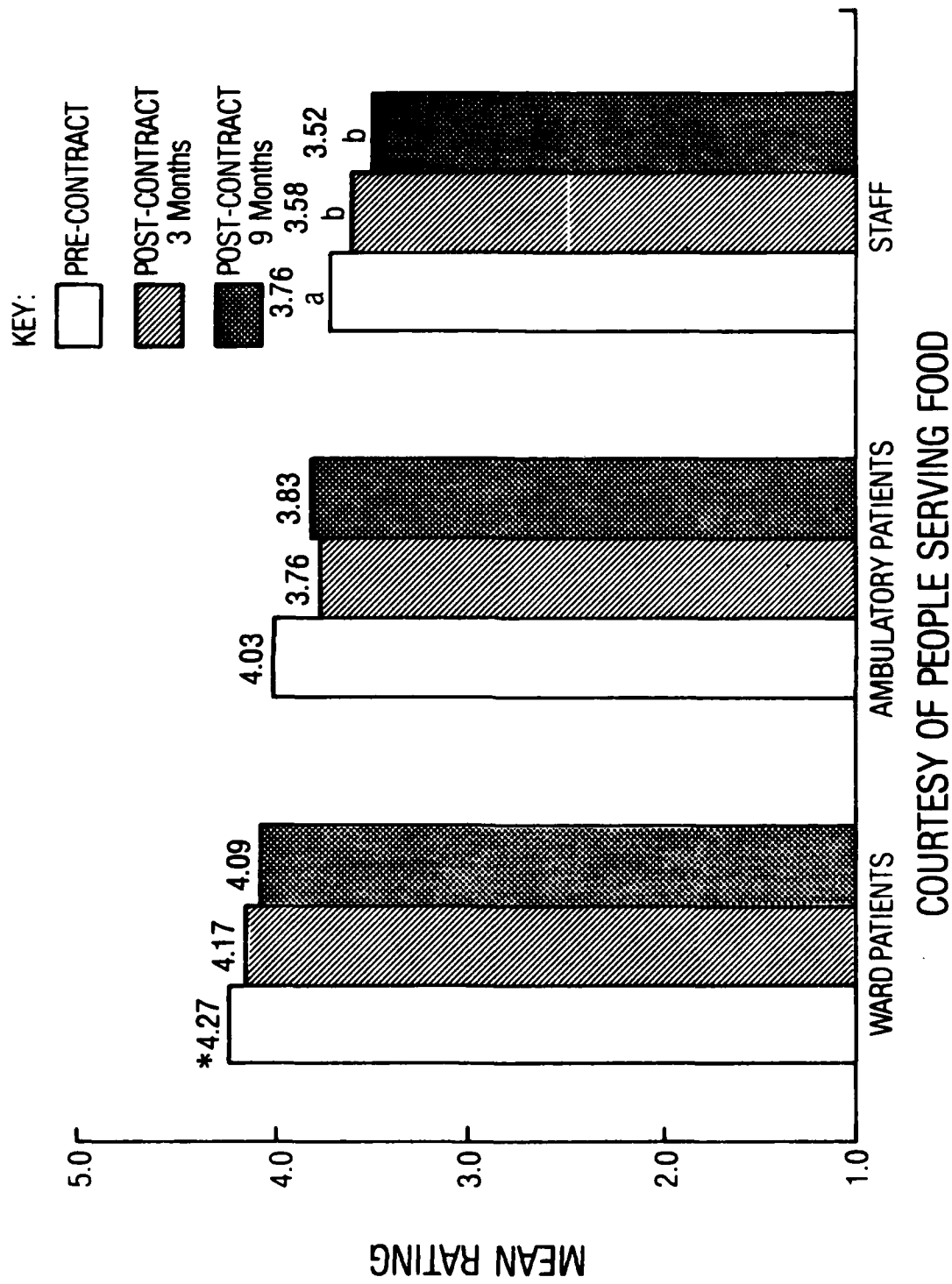


Figure 2

* NO LETTER ABOVE COLUMN INDICATES NO SIGNIFICANT DIFFERENCE

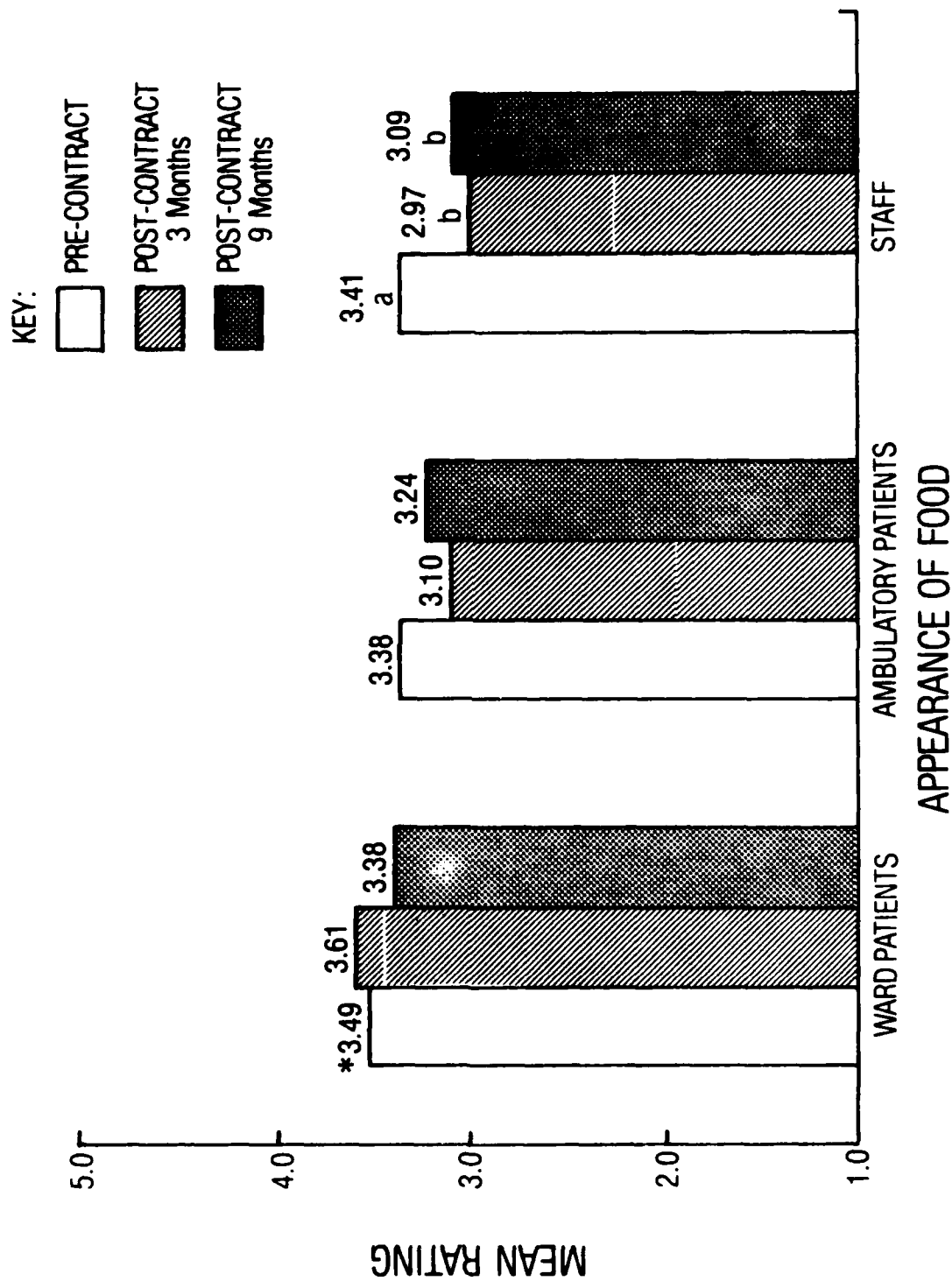


Figure 3

* NO LETTER ABOVE COLUMN INDICATES NO SIGNIFICANT DIFFERENCE

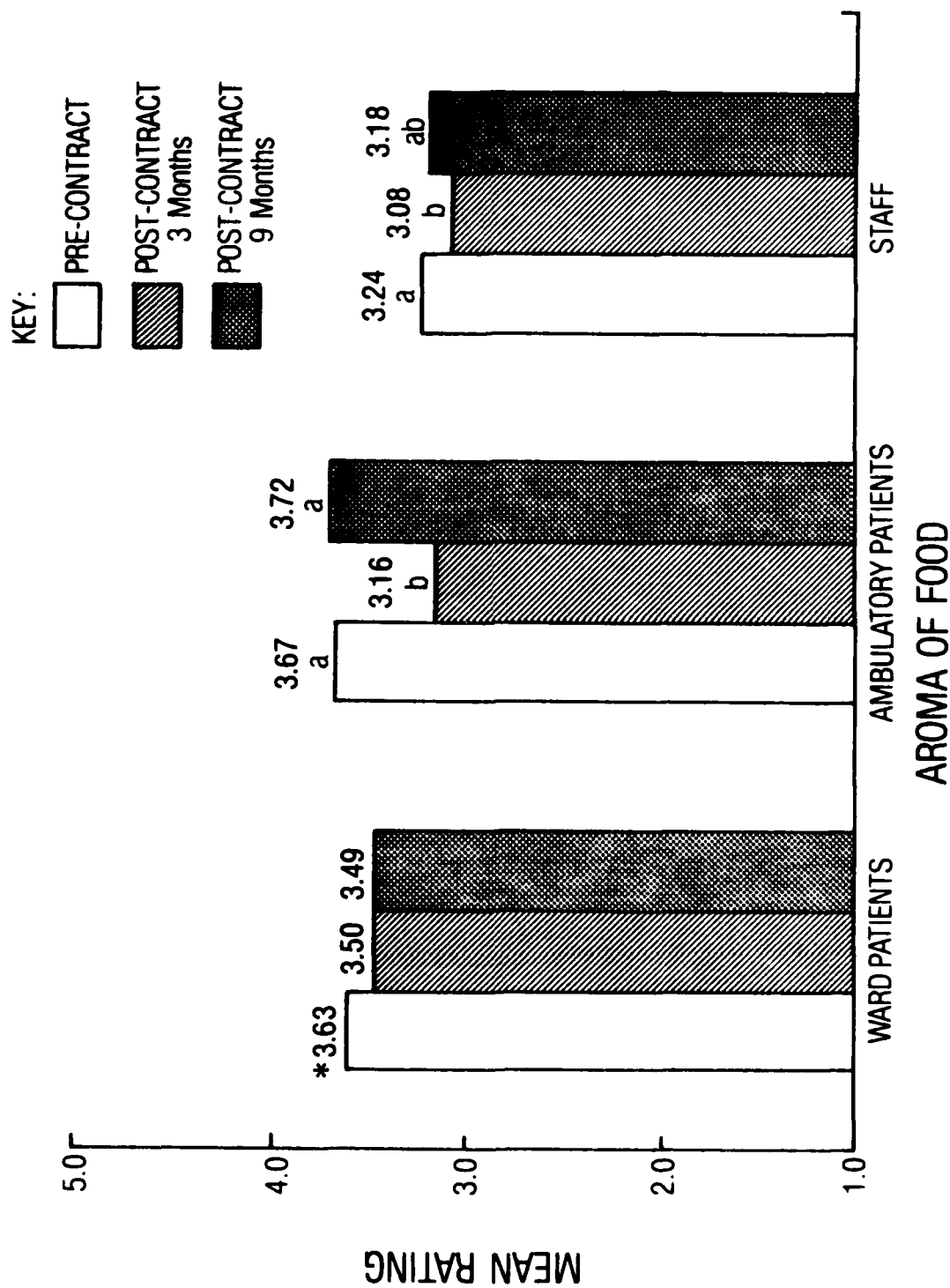


Figure 4

*NO LETTER ABOVE COLUMN INDICATES NO SIGNIFICANT DIFFERENCE

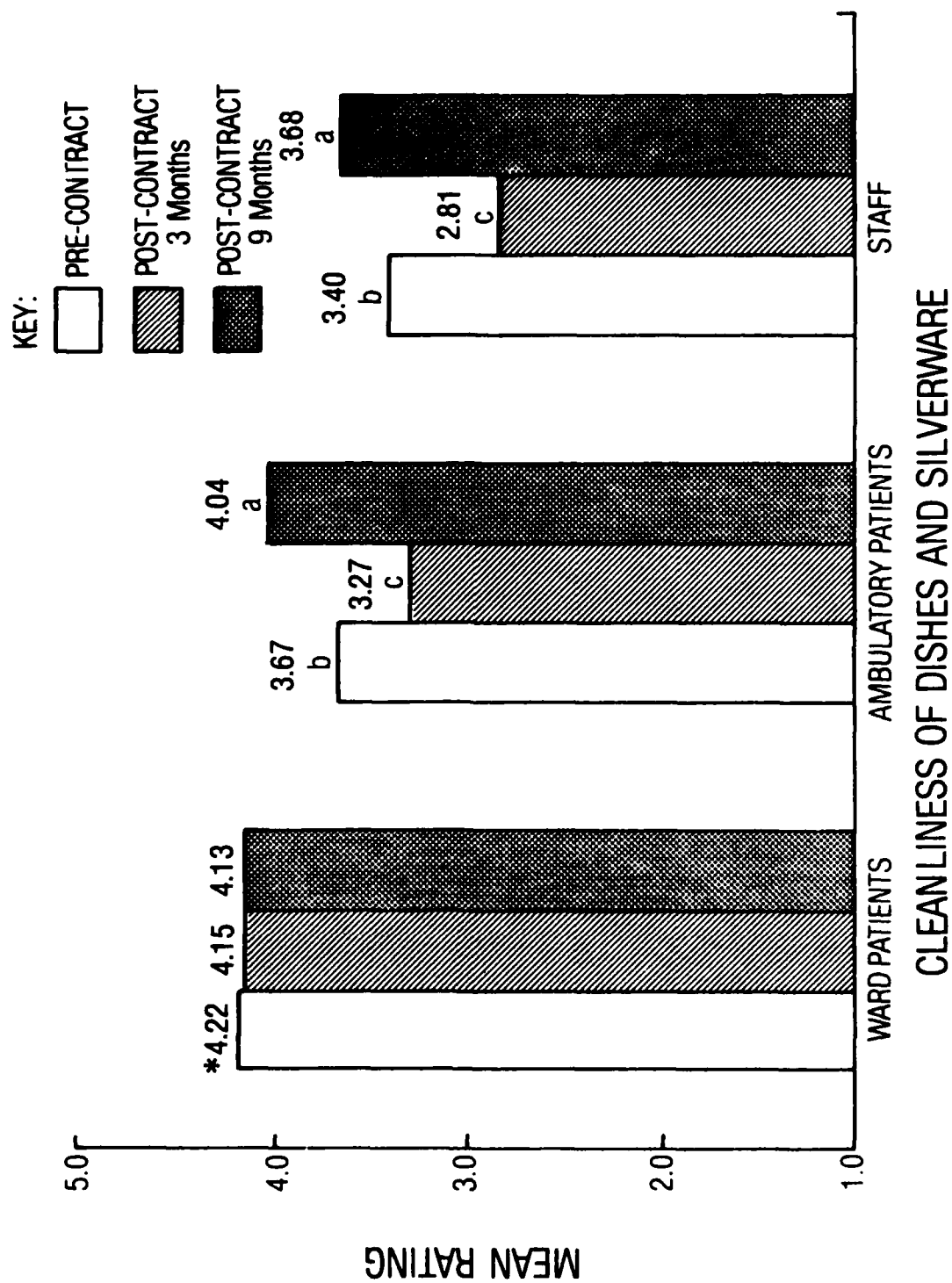


Figure 5

* NO LETTER ABOVE COLUMN INDICATES NO SIGNIFICANT DIFFERENCE

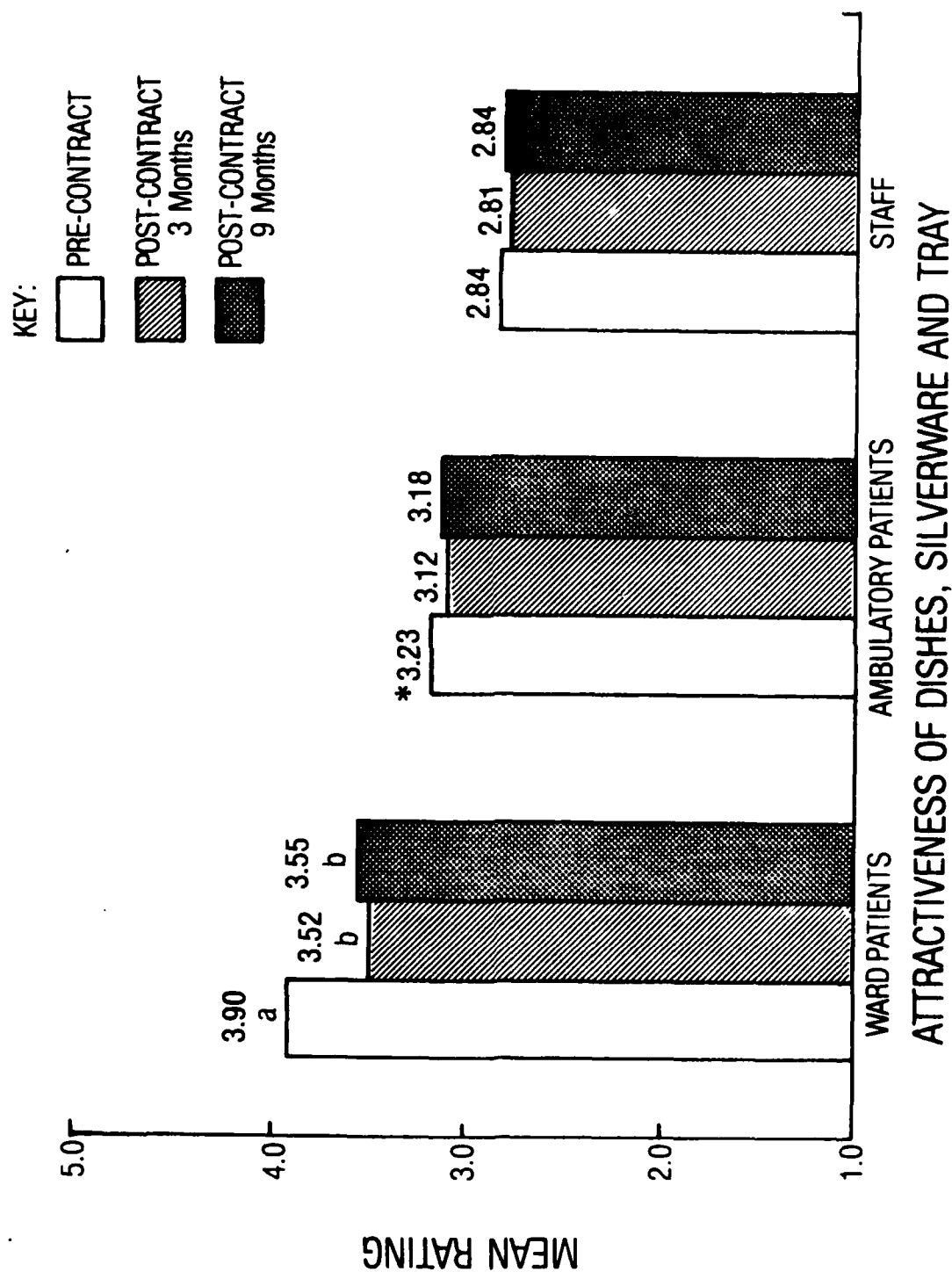


Figure 6

* NO LETTER ABOVE COLUMN INDICATES NO SIGNIFICANT DIFFERENCE

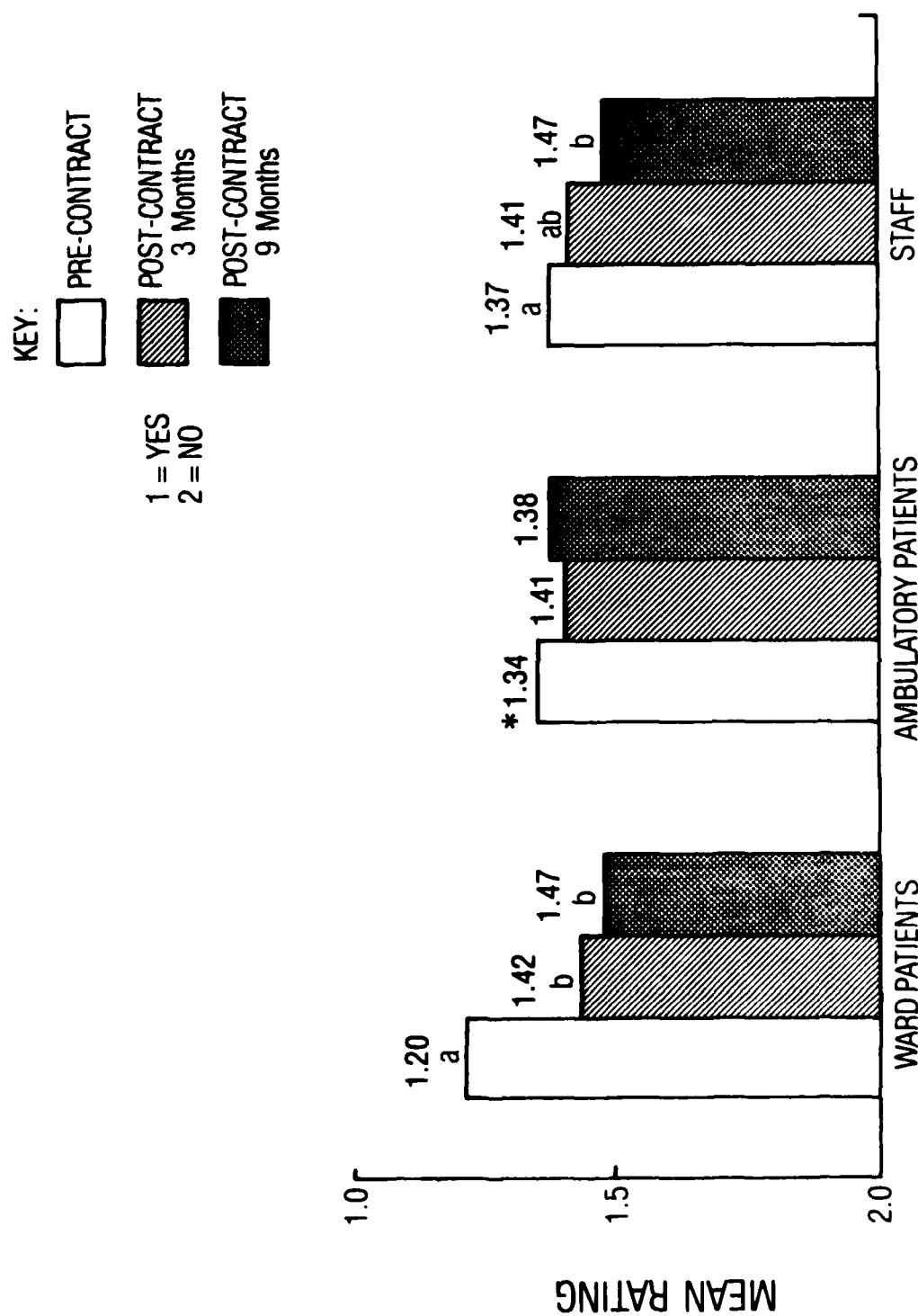


Figure 7

* NO LETTER ABOVE COLUMN INDICATES NO SIGNIFICANT DIFFERENCE

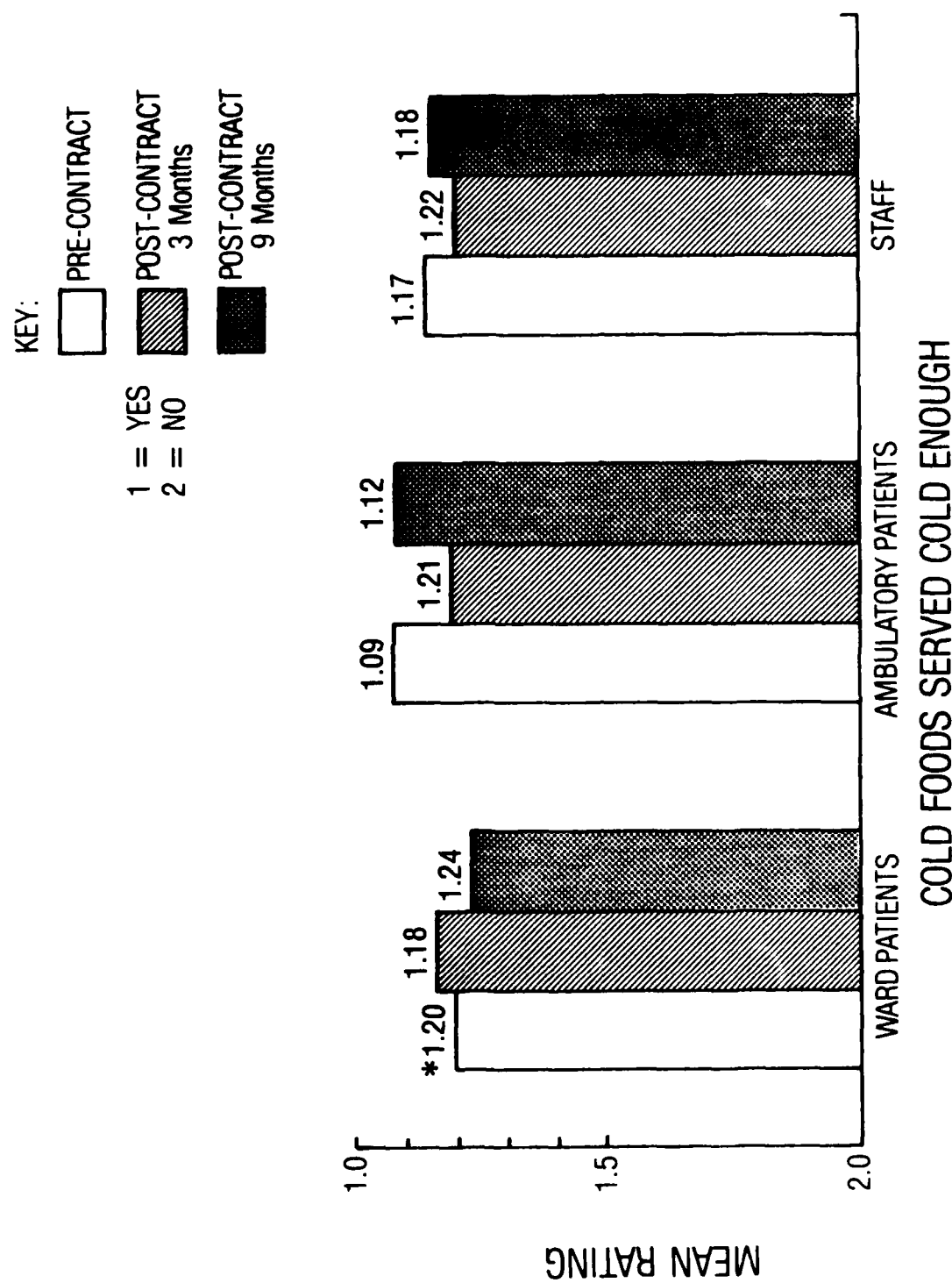


Figure 8

*NO LETTER ABOVE COLUMN INDICATES NO SIGNIFICANT DIFFERENCE

As shown in Fig. 2, the mean ratings on the courtesy of people serving the food were lower, but not statistically significant, under the contract operation for the ward and ambulatory patients. However, the courtesy ratings for staff were significantly lower after three and nine months of contract administration.

The appearance of food (Fig. 3) was not rated significantly different in the three surveys by either the ward or ambulatory patients. The staff personnel rated the appearance significantly lower after three and nine months of contracted food service operation.

There were no statistically significant differences in ward patients' responses to the aroma of the food (Fig. 4) in the three surveys. The ambulatory patients and staff personnel rated the aroma of the food significantly lower after three months of contract operation, but the ratings increased in the nine month survey showing no statistical difference from the pre-contract military operation.

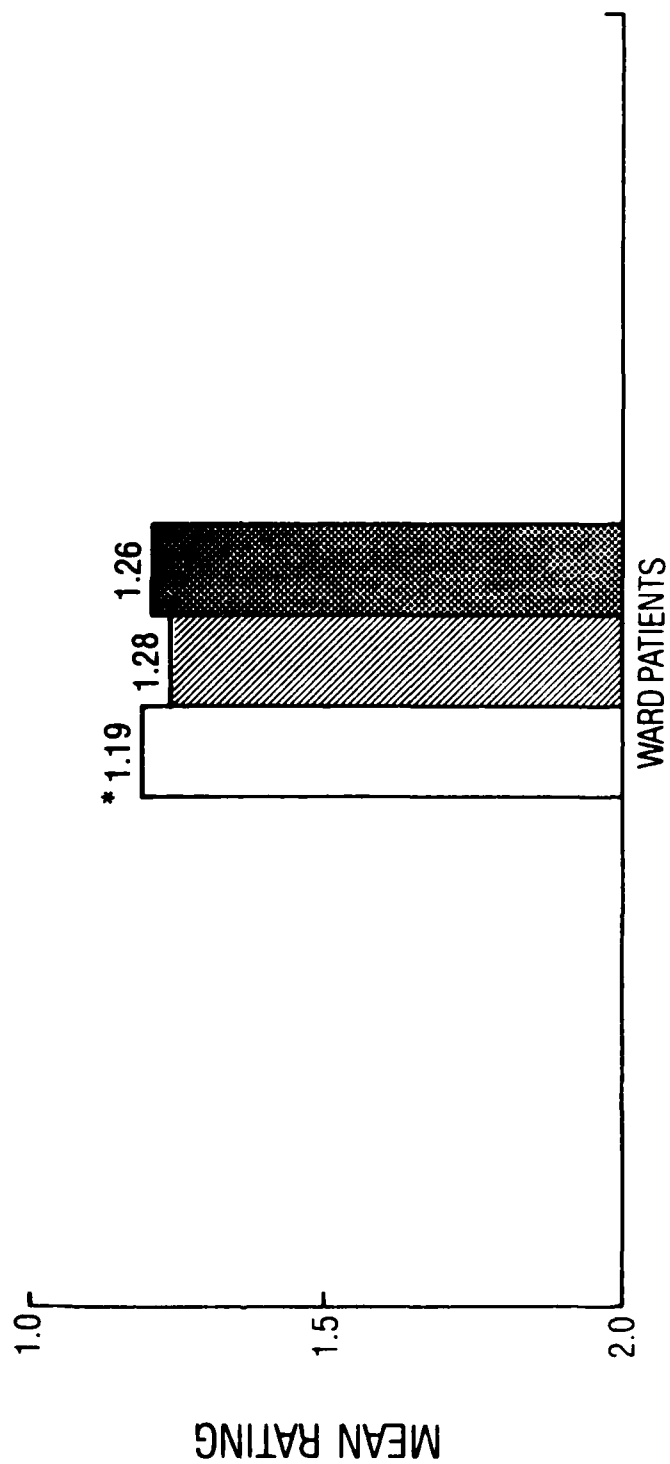
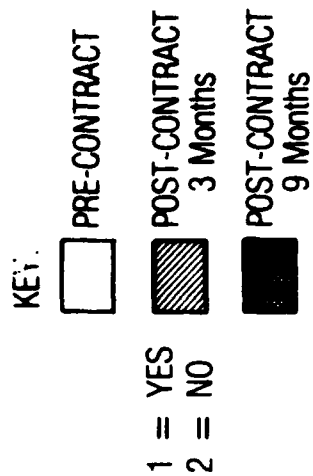
The ward patients also showed no statistically significant difference in the ratings for the cleanliness of the dishes and silverware (Fig. 5) in any of the three surveys. However, those eating in the dining hall (ambulatory patients and staff personnel) rated the cleanliness of dishes and silverware the highest in the nine month post-contract survey, and lower in the pre-contract survey, and lowest in the three month post-contract survey. All of the mean ratings for these two groups were statistically significant in the three surveys.

The attractiveness of dishes and silverware (Fig. 6) was rated significantly lower by the ward patients in both post-contract situations. There were no significant differences in the ambulatory patients and staff responses to this question in any of the three surveys.

In response to hot foods being served hot enough (Fig. 7), the ward patients gave significantly fewer "yes" responses after three and nine months of contract operation. The ambulatory patients showed no significant difference in any of the three surveys, while the staff responses were lower after three months of contract operation, but only significantly lower in the nine months survey.

There were no significant differences in the responses for cold foods being served cold enough in any of the three groups in any of the three surveys (Fig. 8). The ward patients also did not show any significantly different response in the receipt of items ordered in the three surveys (Fig. 9).

The responses to questions analyzed by loglinear models are found in Tables 4 to 18. The responses to the question of meat tenderness required interaction to fit the data ($p < 0.05$) for the ward patients' ratings in the pre-contract situation and the three and nine months post-contract situations. No interaction was shown between the three and nine month responses. As shown in Table 4, more patients rated the meat "moderately tender" in the pre-contract survey, while more responses were in the



RECEIVED FOOD ITEMS ORDERED

Figure 9

* NO LETTER ABOVE COLUMN INDICATES NO SIGNIFICANT DIFFERENCE

TABLE 4. Tenderness of Meat, Ward Patients

Number of Responses					
	Too Tough	Moderately Tough	Neither Tough Nor Tender	Moderately Tender	Too Tender
Pre-Contract	6	12	36	45	0
3 Month Post	8	26	29	30	2
9 Month Post	10	23	27	27	1

Percent Responses					
	Too Tough	Moderately Tough	Neither Tough Nor Tender	Moderately Tender	Too Tender
Pre-Contract	6.1	12.1	36.4	45.5	0.0
3 Month Post	8.4	27.4	30.5	31.6	2.1
9 Month Post	11.4	26.1	30.7	30.7	1.1

"moderately tough" category in the post-contract surveys. The ambulatory patient responses (Table 5) showed a moderately acceptable loglinear fit from the pre-contract to post-contract situations, with a slight trend from more responses in the "moderately tender" category in the post-contract survey and more in the "neither tough nor tender" or "too tough" in the post-contract surveys. No interaction was found between the three and nine months post-contract responses for the ambulatory patients. The staff responses (Table 6) showed a definite interaction ($p > .05$) between the pre-contract survey and both post-contract surveys. The change in response pattern shifted from more responses in the "moderately tender" meat category in the pre-contract survey to "too tough" in the post-contract surveys, even though well over half of the responses in all surveys were in the "neither tough nor tender" or "moderately tough" category.

In response to the cooking of vegetables, the ward and ambulatory patients' ratings showed no interaction over time in the three surveys (Tables 7 and 8). The staff responses gave a moderately acceptable loglinear fit over the three survey periods, with more respondents tending to rate the vegetables more overcooked under contract management and undercooked under military management (Table 9). There was no interaction found in the response pattern of the staff personnel in the three and nine month post-contract surveys.

The ward patients' responses to the seasoning of food were independent of time (Table 10). The ambulatory patients showed interaction over time ($p > .05$). The response pattern was most different in the three month post-contract survey, where fewer patients felt the seasoning was "just right" and more categorized it as "moderately bland" (Table 11). The staff responses required time interaction to fit the data from the three surveys (Table 12). The largest number of responses in the "just-right" category came in the pre-contract survey and the least in the three month post-contract survey. In the post-contract surveys, more responses from the staff personnel were at the "bland" end of the scale, although in all surveys the respondents indicated they thought the food was more bland than spicy.

The ward patient responses showed no time interaction on the question concerning the size of portions (Table 13). The ambulatory patients required time interaction ($p > .05$) to fit the data of the three surveys (Table 14). In the pre-contract survey, more responses were given in the "just right" or "moderately large" categories, while in the three month post-contract survey, greater responses were received in the "too small" category. In the nine month post-contract survey, a different response pattern was again found, this time mainly reflecting more "moderately small" responses to the portion size question. The staff responses also required interaction to fit the data ($p > .05$) from the three surveys, reflecting changes from the portions being considered "just right" under military management to "moderately small" or "too small" under the contract operation (Table 15).

The ward patient and ambulatory patient responses for the variety of items to select were independent of time (Tables 16 and 17), but the staff responses required interaction ($p > .05$). There were more responses in the "moderately large" and "neither large nor small" areas under the military operation and more "moderately small" or "too small" responses under the contracted management (Table 18).

TABLE 5. Tenderness of Meat, Ambulatory Patients

	Number of Responses			
	Too Tough	Moderately Tough	Neither Tough Nor Tender	Moderately Tender Too Tender
Pre-Contract	7	17	32	30
3 Month Post	14	21	24	15
9 Month Post	12	16	35	17

Percent Responses

	Too Tough	Moderately Tough	Neither Tough Nor Tender	Moderately Tender Too Tender
Pre-Contract	8.1	19.8	37.2	34.9
3 Month Post	18.7	28.0	32.0	20.0
9 Month Post	14.8	19.8	43.2	21.0

TABLE 6. Tenderness of Meat, Staff

Number of Responses

	Too Tough	Moderately Tough	Neither Tough Nor Tender	Moderately Tender	Too Tender
Pre-Contract	24	119	148	79	1
3 Month Post	46	88	136	51	3
9 Month Post	55	110	130	58	2

Percent Responses

	Too Tough	Moderately Tough	Neither Tough Nor Tender	Moderately Tender	Too Tender
Pre-Contract	6.5	32.1	39.9	21.3	0.3
3 Month Post	14.2	27.2	42.0	15.7	0.9
9 Month Post	15.5	31.0	36.6	16.3	0.6

TABLE 7. Cooking of Vegetables, Ward Patients

	Number of Responses			
	Too Overcooked	Moderately Overcooked	Neither Under- Nor Overcooked	Moderately Undercooked Too Undercooked
Pre-Contract	6	17	57	11 6
3 Month Post	4	14	61	12 1
9 Month Post	9	15	49	10 4

Percent Responses

	Too Overcooked	Moderately Overcooked	Neither Under- Nor Overcooked	Moderately Undercooked Too Undercooked
Pre-Contract	6.2	17.5	58.8	11.3 6.2
3 Month Post	4.3	15.2	66.3	13.0 1.1
9 Month Post	10.3	17.2	56.2	11.5 4.6

TABLE 8. Cooking of Vegetables, Ambulatory Patients

	Number of Responses			
	Too Overcooked	Moderately Overcooked	Neither Under-Nor Overcooked	Moderately Undercooked Too Undercooked
Pre-Contract	8	9	41	22 5
3 Month Post	13	11	34	8 7
9 Month Post	9	12	37	15 5

Percent Responses

	Percent Responses			
	Too Overcooked	Moderately Overcooked	Neither Under-Nor Overcooked	Moderately Undercooked Too Undercooked
Pre-Contract	9.4	10.6	48.2	25.9 5.9
3 Month Post	17.8	15.1	46.6	11.0 9.6
9 Month Post	11.5	15.4	47.4	19.2 6.4

TABLE 9. Cooking of Vegetables, Staff

	Number of Responses			
	Too Overcooked	Moderately Overcooked	Neither Under- Nor Overcooked	Moderately Undercooked Too Undercooked
Pre-Contract	47	55	146	80
3 Month Post	53	64	121	55
9 Month Post	59	75	137	49

Percent Responses

	Percent Responses			
	Too Overcooked	Moderately Overcooked	Neither Under- Nor Overcooked	Moderately Undercooked Too Undercooked
Pre-Contract	13.0	15.2	40.4	22.2
3 Month Post	16.7	20.2	38.2	17.4
9 Month Post	16.7	21.2	38.8	13.9

TABLE 10. Seasoning of Food, Ward Patients

Number of Responses

	Too Bland	Moderately Bland	Just Right	Moderately Spicy	Too Spicy
Pre-Contract	16	30	49	2	1
3 Month Post	19	35	38	1	2
9 Month Post	18	36	29	3	2

Percent Responses

	Too Bland	Moderately Bland	Just Right	Moderately Spicy	Too Spicy
Pre-Contract	16.3	30.6	50.0	2.0	1.0
3 Month Post	20.0	36.8	40.0	1.1	2.1
9 Month Post	20.5	40.9	32.9	3.4	2.3

TABLE 11. Seasoning of Food, Ambulatory Patients

Number of Responses

	Too Bland	Moderately Bland	Just Right	Moderately Spicy	Too Spicy
Pre-Contract	17	25	39	5	1
3 Month Post	20	26	25	1	3
9 Month Post	8	24	39	8	1

Percent Responses

	Too Bland	Moderately Bland	Just Right	Moderately Spicy	Too Spicy
Pre-Contract	19.5	28.7	44.8	5.7	1.1
3 Month Post	26.7	34.7	33.3	1.3	4.0
9 Month Post	10.0	30.0	48.8	10.0	1.2

TABLE 12. Seasoning of Food, Staff

Number of Responses

	Too Bland	Moderately Bland	Just Right	Moderately Spicy	Too Spicy
Pre-Contract	69	133	145	22	2
3 Month Post	76	170	69	19	3
9 Month Post	86	145	101	16	13

Percent Responses

	Too Bland	Moderately Bland	Just Right	Moderately Spicy	Too Spicy
Pre-Contract	18.6	35.8	39.1	5.9	0.5
3 Month Post	22.6	50.4	20.5	5.6	0.9
9 Month Post	23.8	40.2	28.0	4.4	3.6

TABLE 13. Portion Size, Ward Patients

Number of Responses

	Too Small	Moderately Small	Just Right	Moderately Large	Too Large
Pre-Contract	4	20	62	8	5
3 Month Post	5	18	57	10	4
9 Month Post	7	17	44	14	5

Percent Responses

	Too Small	Moderately Small	Just Right	Moderately Large	Too Large
Pre-Contract	4.0	20.2	62.6	8.1	5.1
3 Month Post	5.3	19.1	60.6	10.6	4.3
9 Month Post	8.0	19.5	50.6	16.1	5.7

TABLE 14. Portion Size, Ambulatory Patients

Number of Responses

	Too Small	Moderately Small	Just Right	Moderately Large	Too Large
Pre-Contract	5	7	50	19	4
3 Month Post	19	11	36	7	2
9 Month Post	3	22	41	13	3

Percent Responses

	Too Small	Moderately Small	Just Right	Moderately Large	Too Large
Pre-Contract	5.9	8.2	58.8	22.4	4.7
3 Month Post	25.3	14.7	48.0	9.3	2.7
9 Month Post	3.7	26.8	50.0	15.9	3.7

TABLE 15. Portion Size, Staff

Number of Responses

	Too Small	Moderately Small	Just Right	Moderately Large	Too Large
Pre-Contract	32	83	225	28	7
3 Month Post	55	107	153	18	2
9 Month Post	82	119	149	14	6

Percent Responses

	Too Small	Moderately Small	Just Right	Moderately Large	Too Large
Pre-Contract	8.5	22.1	60.0	7.5	1.9
3 Month Post	16.4	31.9	45.7	5.4	0.6
9 Month Post	22.2	32.2	40.3	3.8	1.6

TABLE 16. Variety of Items to Select, Ward Patients

	Number of Responses				
	Too Small	Moderately Small	Neither Large Nor Small	Moderately Large	Too Large
Pre-Contract	4	10	59	26	0
3 Month Post	5	13	58	20	1
9 Month Post	11	10	45	22	2

	Percent Responses				
	Too Small	Moderately Small	Neither Large Nor Small	Moderately Large	Too Large
Pre-Contract	4.0	10.1	59.6	26.3	0.0
3 Month Post	5.2	13.4	59.8	20.6	1.0
9 Month Post	12.2	11.1	50.0	24.4	2.2

TABLE 17. Variety of Items to Select, Ambulatory Patients

	Number of Responses			
	Too Small	Moderately Small	Neither Large Nor Small	Moderately Large Too Large
Pre-Contract	7	19	42	18 5
3 Month Post	13	20	25	19 2
9 Month Post	7	19	33	23 1

	Percent Response			
	Too Small	Moderately Small	Neither Large Nor Small	Moderately Large Too Large
Pre-Contract	7.7	20.9	46.2	19.8 5.5
3 Month Post	16.5	25.3	31.6	24.1 2.5
9 Month Post	8.4	22.9	39.8	27.7 1.2

TABLE 18. Variety of Items to Select, Staff

	Number of Responses			
	Too Small	Moderately Small	Neither Large Nor Small	Moderately Large Too Large
Pre-Contract	35	74	171	86 7
3 Month Post	39	112	128	54 2
9 Month Post	69	109	135	55 2

Percent Responses

	Percent Responses			
	Too Small	Moderately Small	Neither Large Nor Small	Moderately Large Too Large
Pre-Contract	9.4	19.8	45.8	23.1 1.9
3 Month Post	11.6	33.4	38.2	16.1 0.6
9 Month Post	18.6	29.5	36.5	14.9 0.5

SUMMARY

The ward patients ratings were significantly higher under military operation on their opinion of all meals served, hot foods served hot enough, and the attractiveness of dishes, silverware and trays. The ward patients also rated the meat tougher under the contract operation. In no area did the ward patients rate the contractor's performance significantly higher than the military.

Ambulatory patients rated their opinion of all meals and the aroma of the food significantly lower after three months of contract operation, although this difference was not significant after nine months of contract operation. These patients also felt that the seasoning of food was more bland, the size of portions smaller, and the meat somewhat more tough under contract management. After nine months of contract operation, ambulatory patients rated the cleanliness of the silverware and dishes significantly higher than either under military management or after three months of contract management. This was the only area that ambulatory patients rated the contract operation significantly higher than the military operations.

Staff respondents rated their opinion of all meals, the courtesy of people serving food, and the appearance of the food significantly lower under the contract operation. The aroma of the food and the hot foods being hot enough were also rated lower but statistically significantly only in the three months post-contract survey. The staff members surveyed also felt that the meat was less tender, the variety of items smaller, the seasoning of the food more bland, the size of the portions smaller and the vegetables somewhat more overcooked under the contract operation than under military management. Although the cleanliness of dishes and silverware was rated very low in the three month post-contract survey, the dishes and silverware were rated cleaner than initially in the nine month post-contract survey. This was the only area in which the staff rated the contractor's performance significantly higher than the military food operation.

CONCLUSION

The results of the acceptability surveys of food and food service quality under military management and after three and nine months of contract operated food service at Fitzsimons Army Medical Center clearly show a decrease in consumer acceptance under contracted food service operation. The importance of such a decrease in consumer satisfaction under contractor operations should be carefully considered when feeding ill or injured personnel.

LIST OF REFERENCES

1. O. Maller, C. Dubose, and A. Cardello. Opinions of food service at military hospitals. J. Am. Diet. Assoc., 76, 236-242.
2. J. Floss. Statistical Methods for Rates and Proportions. New York; John Wiley & Sons, Inc., 1973.
3. Stephen E. Fienberg. The Analysis of Cross-Classified Data. Cambridge, MA; The MIT Press, 1977.

APPENDIX A

Questionnaires:

Military Hospital Food Service Survey (Ward)
Military Hospital Food Service Survey (Ambulatory)
Military Hospital Food Service Survey (Staff)

MILITARY HOSPITAL FOOD SERVICE SURVEY
(Ward)
U.S. ARMY NATICK R&D LABORATORIES
NATICK, MASSACHUSETTS 01760

We are from the U.S. Army Research & Development Laboratories at Natick, MA. The Army has asked us to evaluate the quality of the food service they provide. We would like you to fill out this questionnaire. Your responses will be kept confidential and your name is not required. Your participation is voluntary and will be of value in improving the food service. If you have any questions about how to fill out this form, the person who distributed the questionnaire will be glad to answer them.

Please do not discuss your responses to the questionnaire with others.

SAMPLE: If your age is 24, mark box "2"

<u>Under 18</u>	<u>18 - 25</u>	<u>26 - 50</u>	<u>51 - 65</u>	<u>Over 65</u>
1	2	3	4	5

1	2	3	4	5
☐	☒	☐	☐	☐

1. What is your current status?

- 1) Military person
- 2) Dependent of military person
- 3) Retired military person
- 4) Dependent of retired military person
- 5) Other

1	2	3	4	5
☐	☐	☐	☐	☐

2. Age?

<u>Under 18</u>	<u>18-25</u>	<u>26-50</u>	<u>51-65</u>	<u>Over 65</u>
1	2	3	4	5

1	2	3	4	5
☐	☐	☐	☐	☐

3. Sex?

<u>Male</u>	<u>Female</u>
1	2

1	2
☐	☐

4. How many days have you eaten meals at this hospital?

<u>1-3 days</u>	<u>4-6 days</u>	<u>7-13 days</u>	<u>14-30 days</u>	<u>Over 30 days</u>
1	2	3	4	5

1	2	3	4	5
☐	☐	☐	☐	☐

5. What is your current diet?

<u>Regular</u>	<u>Special or Modified</u>
1	2

1	2
☐	☐

*This survey form is a modified version of the questionnaire "Opinions of Food Service at Military Hospitals" (Maller, Dubose and Cardello, J. Amer. Diet. Assoc., 1980, 76, 236-242.

6. Do you understand your diet?

Yes No
1 2

1 2
☐ ☐

7. Which meal did you just finish eating?

Breakfast Mid-day meal Evening meal
1 2 3

1 2 3
☐ ☐ ☐

8. How much of your meal did you eat?

None Some Most All
1 2 3 4

1 2 3 4
☐ ☐ ☐ ☐

9. How do you feel about the courtesy and cheerfulness of the people serving your food?

Very Dissatisfied Moderately Dissatisfied Neither Dissatisfied nor Satisfied Moderately Satisfied Very Satisfied
1 2 3 4 5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

Indicate your opinion of the meal you have just finished by responding to the following items.

10. Appearance of Food Served

Very Attractive Moderately Attractive Neither Attractive nor Unattractive Moderately Unattractive Very Unattractive
5 4 3 2 1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

11. Aroma of Food

Very Unpleasant Moderately Unpleasant Neither Pleasant nor Unpleasant Moderately Pleasant Very Pleasant
1 2 3 4 5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

12. Variety of Items to Select

Too Large Moderately Large Neither Large nor Small Moderately Small Too Small
5 4 3 2 1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

13. Seasoning of Food

Too Bland Moderately Bland Just Right Moderately Spicy Too Spicy
1 2 3 4 5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

14. Size of Food Portions

Too Large Moderately Large Just Right Moderately Small Too Small
5 4 3 2 1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

15. Cleanliness of Dishes and Silverware

Very Clean Moderately Clean Clean Moderately Dirty Very Dirty
5 4 3 2 1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

16. Attractiveness of Dishes, Silverware and Tray

Very Unattractive Moderately Unattractive Neither Attractive nor Unattractive Moderately Attractive Very Attractive
1 2 3 4 5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

17. Thoroughness of Cooking Vegetables

Too Overcooked Moderately Overcooked Neither Overcooked nor Undercooked Moderately Undercooked Too Undercooked
5 4 3 2 1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

18. Tenderness of Meat

Too Tough Moderately Tough Neither Tough nor Tender Moderately Tender Too Tender
1 2 3 4 5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

19. Were your hot food items the temperature you like them when you ate them?

Yes No
1 2

1 2
☐ ☐

<u>Yes</u>	<u>No</u>
1	2

1 2

5 4 3 2 1

5 4 3 2 1

<u>Very Good</u>	<u>Good</u>	<u>Neither Good nor Bad</u>	<u>Bad</u>	<u>Very Bad</u>
5	4	3	2	1

5 4 3 2 1

<u>Yes</u>	<u>No</u>
1	2

1 2

Knife ☐ 1
Fork ☐ 2
Spoon ☐ 3
Napkin ☐ 4

<u>Yes</u>	<u>No</u>
1	2

1 2

a. _____

a.

b. _____

b.

39

MILITARY HOSPITAL FOOD SERVICE SURVEY
(Ambulatory)

U.S. ARMY NATICK R&D LABORATORIES
NATICK, MASSACHUSETTS 01760

We are from the U.S. Army Research & Development Laboratories at Natick, MA. The Army has asked us to evaluate the quality of the food service they provide. We would like you to fill out this questionnaire. Your responses will be kept confidential and your name is not required. Your participation is voluntary and will be of value in improving the food service. If you have any questions about how to fill out this form, the person who distributed the questionnaire will be glad to answer them.

Please do not discuss your responses to the questionnaire with others.

SAMPLE: If your age is 24, mark box "2"

<u>Under 18</u>	<u>18 - 25</u>	<u>26 - 50</u>	<u>51 - 65</u>	<u>Over 65</u>
1	2	3	4	5

1	2	3	4	5
☐	☒	☐	☐	☐

1. What is your current status?

- 1) Military person
- 2) Dependent of military person
- 3) Retired military person
- 4) Dependent of retired military person
- 5) Other

1	2	3	4	5
☐	☐	☐	☐	☐

2. Age?

<u>Under 18</u>	<u>18-25</u>	<u>26-50</u>	<u>51-65</u>	<u>Over 65</u>
1	2	3	4	5

1	2	3	4	5
☐	☐	☐	☐	☐

3. Sex?

<u>Male</u>	<u>Female</u>
1	2

1	2
☐	☐

4. How many days have you eaten meals at this hospital?

<u>1-3 days</u>	<u>4-6 days</u>	<u>7-13 days</u>	<u>14-30 days</u>	<u>Over 30 days</u>
1	2	3	4	5

1	2	3	4	5
☐	☐	☐	☐	☐

*This survey form is a modified version of the questionnaire "Opinions of Food Service at Military Hospitals" (Maller, Dubose and Gardello, J. Amer. Diet. Assoc., 1980, 76, 236-242.

5. What is your current diet?

Regular
1

Special or Modified
2

1 2
☐ ☐

6. Which meal did you just finish eating?

Breakfast
1

Mid-day meal
2

Evening meal
3

1 2 3
☐ ☐ ☐

7. How much of your meal did you eat?

None
1

Some
2

Most
3

All
4

1 2 3 4
☐ ☐ ☐ ☐

8. How do you feel about the courtesy and cheerfulness of the people serving your food?

Very Dissatisfied
1

Moderately Dissatisfied
2

Neither Dissatisfied nor Satisfied
3

Moderately Satisfied
4

Very Satisfied
5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

Indicate your opinion of the meal you have just finished by responding to the following items.

9. Appearance of Food Served

Very Attractive
5

Moderately Attractive
4

Neither Attractive nor Unattractive
3

Moderately Unattractive
2

Very Unattractive
1

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

10. Aroma of Food

Very Unpleasant
1

Moderately Unpleasant
2

Neither Pleasant nor Unpleasant
3

Moderately Pleasant
4

Very Pleasant
5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

11. Variety of Items to Select

Too Large
5

Moderately Large
4

Neither Large nor Small
3

Moderately Small
2

Too Small
1

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

12. Seasoning of Food	<u>Too Bland</u> 1	<u>Moderately Bland</u> 2	<u>Just Right</u> 3	<u>Moderately Spicy</u> 4	<u>Too Spicy</u> 5					
						1	2	3	4	5
						☐	☐	☐	☐	☐
13. Size of Food Portions	<u>Too Large</u> 5	<u>Moderately Large</u> 4	<u>Just Right</u> 3	<u>Moderately Small</u> 2	<u>Too Small</u> 1					
						5	4	3	2	1
						☐	☐	☐	☐	☐
14. Cleanliness of Dishes and Silverware	<u>Very Clean</u> 5	<u>Moderately Clean</u> 4	<u>Clean</u> 3	<u>Moderately Dirty</u> 2	<u>Very Dirty</u> 1					
						5	4	3	2	1
						☐	☐	☐	☐	☐
15. Attractiveness of Dishes, Silverware and Tray	<u>Very Unattractive</u> 1	<u>Moderately Unattractive</u> 2	<u>Neither Attractive nor Unattractive</u> 3	<u>Moderately Attractive</u> 4	<u>Very Attractive</u> 5					
						1	2	3	4	5
						☐	☐	☐	☐	☐
16. Thoroughness of Cooking Vegetables	<u>Too Overcooked</u> 5	<u>Moderately Overcooked</u> 4	<u>Neither Overcooked nor Undercooked</u> 3	<u>Moderately Undercooked</u> 2	<u>Too Undercooked</u> 1					
						5	4	3	2	1
						☐	☐	☐	☐	☐
17. Tenderness of Meat	<u>Too Tough</u> 1	<u>Moderately Tough</u> 2	<u>Neither Tough nor Tender</u> 3	<u>Moderately Tender</u> 4	<u>Too Tender</u> 5					
						1	2	3	4	5
						☐	☐	☐	☐	☐
18. Were your hot food items the temperature you like them when you ate them?	<u>Yes</u> 1	<u>No</u> 2								
						1	2			
						☐	☐			

19. Were your cold food items the temperature you like them when you ate them?

Yes No
1 2

1 2
□ □

20. How do you feel right now?



5



4



3



2



1

5 4 3 2 1
□ □ □ □ □

21. What is your opinion of all the meals you have eaten in this hospital?

Very Good
5

Good
4

Neither
Good
nor
Bad
3

Bad
2

Very Bad
1

5 4 3 2 1
□ □ □ □ □

In order to give you an opportunity to make some specific suggestions to improve the food service, please answer the following items. Write your suggestions directly on the questionnaire.

22. Which food item(s) from today's meal did you not finish and/or touch?

Did not finish

Why did you not eat or finish?

- a. _____
b. _____
c. _____
d. _____

- a. _____
b. _____
c. _____
d. _____

23. What changes in the food service would make you stay in the hospital a more pleasant one: Please list them below.

- a. _____
b. _____
c. _____
d. _____
e. _____

Thank you for your assistance.

MILITARY HOSPITAL FOOD SERVICE SURVEY
(Staff)

U.S. ARMY NATICK R&D LABORATORIES
NATICK, MASSACHUSETTS 01760

We are from the U.S. Army Research & Development Laboratories at Natick, MA. The Army has asked us to evaluate the quality of the food service they provide. We would like you to fill out this questionnaire. Your responses will be kept confidential and your name is not required. Your participation is voluntary and will be of value in improving the food service. If you have any questions about how to fill out this form, the person who distributed the questionnaire will be glad to answer them.

Please do not discuss your responses to the questionnaire with others.

Sample: If your age is 24, mark box "2".

<u>Under 18</u>	<u>18 - 25</u>	<u>26 - 50</u>	<u>51 - 65</u>	<u>Over 65</u>					
1	2	3	4	5					
					1	2	3	4	5
					☐	☒	☐	☐	☐

1. What is your current status?

1) Doctor	5) Administrative staff							
2) Nurse	6) Guest							
3) Food service worker	7) Medic							
4) Technician	8) Other							
		1	2	3	4	5	6	7
		☐	☐	☐	☐	☐	☐	☐

2. Age?

<u>Under 18</u>	<u>18-25</u>	<u>26-50</u>	<u>51-65</u>	<u>Over 65</u>				
1	2	3	4	5				
					1	2	3	4
					☐	☐	☐	☐

3. Sex?

<u>Male</u>	<u>Female</u>		
1	2		
		1	2
		☐	☐

4. How long have you worked at this hospital?

<u>Less than 6 months</u>	<u>6 months-1 year</u>	<u>1-3 years</u>	<u>3-10 years</u>	<u>Over 10 years</u>				
1	2	3	4	5				
					1	2	3	4
					☐	☐	☐	☐

*This survey form is a modified version of the questionnaire "Opinions of Food Service at Military Hospitals" (Maller, Dubose and Cardello. J. Amer. Diet. Assoc., 1980, 76, 236-242.

5. During a typical week, how many days do you eat your **breakfast** in the hospital dining room (cafeteria)?

<u>Never</u>	<u>1-2 days</u>	<u>3-4 days</u>	<u>5 days</u>	<u>6-7 days</u>					
1	2	3	4	5					
						☐	☐	☐	☐

6. During a typical week, how many days do you eat your **mid-day meal** in the hospital dining room (cafeteria)?

<u>Never</u>	<u>1-2 days</u>	<u>3-4 days</u>	<u>5 days</u>	<u>6-7 days</u>					
1	2	3	4	5					
						☐	☐	☐	☐

7. During a typical week, how many days do you eat your **evening meal** in the hospital dining room (cafeteria)?

<u>Never</u>	<u>1-2 days</u>	<u>3-4 days</u>	<u>5 days</u>	<u>6-7 days</u>					
1	2	3	4	5					
						☐	☐	☐	☐

8. Which meal did you just finish eating?

<u>Breakfast</u>	<u>Mid-day meal</u>	<u>Evening meal</u>			
1	2	3			
			☐	☐	☐

9. How much of your meal did you eat?

<u>None</u>	<u>Some</u>	<u>Most</u>	<u>All</u>				
1	2	3	4				
				☐	☐	☐	☐

10. What is your opinion of **all** the meals you have eaten in this hospital?

		Neither Good nor Bad			
<u>Very Good</u>	<u>Good</u>	<u>Bad</u>	<u>Very Bad</u>		
5	4	3	2	1	
					☐
					☐
					☐
					☐
					☐

11. How do you feel about the courtesy and cheerfulness of the people serving your food?

		Neither Satisfied nor Dissatisfied			
<u>Very Satisfied</u>	<u>Moderately Satisfied</u>	<u>Moderately Dissatisfied</u>	<u>Very Dissatisfied</u>		
5	4	3	2	1	
					☐
					☐
					☐
					☐
					☐

Indicate your opinion of the meal you have just finished by responding to the following items.

12. Appearance
of Food
Served

Very
Attractive
5

Moderately
Attractive
4

Neither
Attractive
nor
Unattractive
3

Moderately
Unattractive
2

Very
Unattractive
1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

13. Aroma of
Food

Very
Unpleasant
1

Moderately
Unpleasant
2

Neither
Pleasant
nor
Unpleasant
3

Moderately
Pleasant
4

Very
Pleasant
5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

14. Variety
of Items
to Select

Too Large
5

Moderately
Large
4

Neither
Large
nor
Small
3

Moderately
Small
2

Too Small
1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

15. Seasoning
of Food

Too Bland
1

Moderately
Bland
2

Just
Right
3

Moderately
Spicy
4

Too Spicy
5

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

16. Size of
Food
Portions

Too Large
5

Moderately
Large
4

Just
Right
3

Moderately
Small
2

Too Small
1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

17. How do you feel right now?



5



4



3



2



1

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

18. Cleanliness of Dishes and Silverware

<u>Very Clean</u>	<u>Moderately Clean</u>	<u>Clean</u>	<u>Moderately Dirty</u>	<u>Very Dirty</u>					
5	4	3	2	1	5	4	3	2	1
					☐	☐	☐	☐	☐

19. Attractiveness of Dishes, Silverware and Tray

<u>Very Unattractive</u>	<u>Moderately Unattractive</u>	<u>Neither Attractive nor Unattractive</u>	<u>Moderately Attractive</u>	<u>Very Attractive</u>					
1	2	3	4	5	1	2	3	4	5
					☐	☐	☐	☐	☐

20. Thoroughness of Cooking Vegetables

<u>Too Overcooked</u>	<u>Moderately Overcooked</u>	<u>Neither Overcooked nor Undercooked</u>	<u>Moderately Undercooked</u>	<u>Too Undercooked</u>					
5	4	3	2	1	5	4	3	2	1
					☐	☐	☐	☐	☐

21. Tenderness of Meat

<u>Too Tough</u>	<u>Moderately Tough</u>	<u>Neither Tough nor Tender</u>	<u>Moderately Tender</u>	<u>Too Tender</u>					
1	2	3	4	5	1	2	3	4	5
					☐	☐	☐	☐	☐

22. Were your hot food items the temperature you like them when you ate them?

<u>Yes</u>	<u>No</u>		
1	2	1	2
		☐	☐

23. Were your cold food items the temperature you like them when you ate them?

<u>Yes</u>	<u>No</u>		
1	2	1	2
		☐	☐

In order to give you an opportunity to make some specific suggestions to improve the food service, please answer the following items. Write your suggestions directly on the questionnaire.

24. What food item(s) from today's meal did you not finish and/or touch?

Did not finish

Why did you not eat or finish?

a. _____

a. _____

b. _____

b. _____

c. _____

c. _____

25. What changes in the food service would make you eat more of your meals at the hospital dining room?

Please list them below.

a. _____

b. _____

c. _____

d. _____

Thank you for your assistance.

APPENDIX B

**Responses to Survey Questions
(Ward, Ambulatory, Staff)**

TABLE B-1. Age Distribution of Patient and Staff

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months
Less than 18 years	0.0	0.0	1.1	3.2	2.6	1.2	1.6	0.0	1.3
18-25 years	18.2	19.8	19.6	43.2	34.6	31.3	45.8	41.9	44.2
26-50 years	34.4	36.6	33.7	33.7	43.6	43.4	48.4	52.2	47.4
51-65 years	38.4	30.7	35.9	15.8	14.1	16.9	3.4	5.3	4.9
Over 65	8.1	12.9	9.8	4.2	5.1	7.2	0.8	0.6	2.2
Total	100	100	100	100	100	100	100	100	100

TABLE B-2. Distribution of Males and Females

Percent Response

Name	Ward Patients				Ambulatory Patients				Staff			
	Pre-Contract		Post-Contract		Pre-Contract		Post-Contract		Pre-Contract		Post-Contract	
	3 Months	9 Months	3 Months	9 Months	3 Months	9 Months	3 Months	9 Months	3 Months	9 Months	3 Months	9 Months
Female	57.7	56.0	53.8	81.1	78.5	77.1	76.5	76.0	75.3			
Total	42.3	44.0	46.2	18.9	21.5	22.9	23.5	24.0	24.7			
	100	100	100	100	100	100	100	100	100			

TABLE B-3. Occupation of Survey Staff

Percent Response

	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %
Doctor	12.9	8.5	11.3
Nurse	15.7	10.3	11.6
Food Service Worker	1.6	1.2	0.5
Technician	18.6	24.0	15.6
Administrative Staff	5.8	4.7	6.2
Guest	3.7	7.6	12.1
Medic	13.4	10.0	11.1
Students and Other	28.3	33.7	31.6
Total	100	100	100

TABLE B-4. Length of Employment (Staff)**Percent Response**

	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %
Less than 6 months	43.5	56.4	45.5
6 months to 1 year	21.6	14.5	23.1
1 to 3 years	23.9	18.4	20.3
3 to 10 years	9.1	8.1	8.3
Over 10 years	1.9	2.6	2.8
Total	100	100	100

TABLE B-5. Number of Days Per Week Meals are Eaten in Cafeteria (Staff)

Percent Response

	Breakfast			Dinner			Supper		
	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %
Never	37.9	35.0	38.6	9.4	6.9	12.1	38.4	35.7	37.2
1-2 days	21.4	17.0	22.3	20.9	19.1	20.7	17.7	13.5	16.6
3-4 days	12.9	14.6	12.9	20.4	18.2	14.9	13.9	10.6	12.7
5 days	15.5	15.8	11.3	24.9	27.4	26.7	11.5	14.1	12.2
6-7 days	12.3	17.6	14.9	24.4	28.4	25.6	18.5	26.1	21.3
Total	100	100	100	100	100	100	100	100	100

TABLE B-6. Military Classification of Surveyed Patients

Percent Response

	Ward Patients			Ambulatory Patients		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Military	28.7	22.8	26.1	64.1	65.4	48.2
Military Dependent	17.8	20.8	18.5	5.3	6.4	7.2
Retired Military	33.7	33.6	32.5	21.1	20.5	26.5
Retired Military Dependent	17.8	18.8	19.6	7.4	6.4	16.9
Other	2.0	4.0	3.3	2.1	1.3	1.2
Total	100	100	100	100	100	100

TABLE B-7. Number of Days Meals Have Been Eaten in Hospital (Patients)

	Percent Response			
	Ward Patients		Ambulatory Patients	
	Pre-Contract	Post-Contract	Pre-Contract	Post-Contract
	3 Months	9 Months	3 Months	9 Months
	%	%	%	%
1-3 days	20.8	25.7	7.4	5.1
4-6 days	13.9	17.8	12.8	11.5
7-13 days	16.8	22.8	10.6	25.6
14-30 days	27.7	13.9	20.2	12.8
Over 30 days	20.8	19.8	49.0	45.0
Total	100	100	100	100

TABLE B-8. Type of Diet (Patients)

	Percent Response			
	Ward Patients		Ambulatory Patients	
	Pre-Contract	Post-Contract 3 Months	Pre-Contract	Post-Contract 3 Months
	%	%	%	%
Regular	71.3	76.0	93.5	90.8
Modified	28.7	24.0	6.5	9.2
Total	100	100	100	100

TABLE B-9. Understanding of Diet (Ward Patients)

Percent Response

	Pre-Contract	Post-Contract 3 Months	Post-Contract 9 Months
	%	%	%
Yes	96.9	93.9	95.6
No	3.1	6.1	4.4
Total	100	100	100

TABLE B-10. Opinion of All Meals Eaten

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Very Good	23.2	18.2	9.2	18.9	7.8	12.2	11.8	2.4	5.4
Good	54.7	46.5	49.4	43.3	32.5	39.0	47.9	27.1	28.8
Neither Good/Nor Bad	18.9	24.2	18.4	26.7	24.7	35.4	28.6	42.5	38.8
Bad	2.1	11.1	11.5	7.8	19.5	13.4	8.3	21.2	20.5
Very Bad	1.1	0.0	11.5	3.3	15.6	0.0	3.5	6.8	6.5
Total	100	100	100	100	100	100	100	100	100

TABLE B-11. Courtesy and Cheerfulness of Service

Percent Response

	Ward Patients				Ambulatory Patients				Staff			
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Very Satisfied	47.0	49.5	46.7	42.4	32.9	32.9	28.5	18.4	20.7			
Moderately Satisfied	33.0	25.3	28.9	31.5	34.2	32.9	37.8	42.2	34.1			
Neither Satisfied Nor Dissatisfied	18.0	20.2	14.4	16.3	15.2	23.2	20.2	20.5	25.0			
Moderately Dissatisfied	1.0	3.0	6.7	6.5	11.4	6.1	8.5	16.6	16.9			
Very Dissatisfied	1.0	2.0	3.3	3.3	6.3	4.9	5.1	2.4	3.2			
Total	100	100	100	100	100	100	100	100	100			

TABLE B-12. Meal Just Eaten

Percent Response

	Ward Patients				Ambulatory Patients				Staff			
	Pre-Contract %	3 Months	Post-Contract 9 Months %	Pre-Contract %	3 Months	Post-Contract 9 Months %	Pre-Contract %	3 Months	Post-Contract 9 Months %	Pre-Contract %	3 Months	Post-Contract 9 Months %
Breakfast	37.4	39.0	21.3	21.5	19.5	19.5	28.3	10.5	19.3			
Dinner	33.3	32.0	52.9	22.6	31.2	29.3	47.4	64.8	48.5			
Supper	29.3	29.0	25.8	55.9	49.4	51.2	24.3	24.7	31.6			
Total	100	100	100	100	100	100	100	100	100			

TABLE B-13. Amount of Meal Eaten

Percent Response

	Ward Patients				Ambulatory Patients				Staff			
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	3 Months %	Post-Contract 9 Months %	9 Months %
None	3.0	3.1	2.2	0.0	0.0	0.0	1.2	1.4	0.3	0.3	0.8	0.8
Some	27.3	26.5	28.1	10.3	31.6	18.1	12.7	23.0	20.5	20.5	20.5	20.5
Most	36.4	42.9	43.8	27.6	38.2	50.6	39.2	42.3	40.2	42.3	40.2	40.2
All	33.3	27.6	25.8	62.1	30.3	30.1	46.8	34.4	38.5	34.4	38.5	38.5
Total	100	100	100	100	100	100	100	100	100	100	100	100

TABLE B-14. Opinion of Meal Just Eaten

Appearance of Food

Percent Response

	Ward Patients				Ambulatory Patients				Staff			
	Pre-Contract		Post-Contract		Pre-Contract		Post-Contract		Pre-Contract		Post-Contract	
	3 Months	9 Months	3 Months	9 Months	3 Months	9 Months	3 Months	9 Months	3 Months	9 Months	3 Months	9 Months
	Σ	Σ	Σ	Σ	Σ	Σ	Σ	Σ	Σ	Σ	Σ	Σ
Very Attractive	16.0	19.2	12.1	18.7	8.9	7.2	9.1	4.1	4.8			
Moderately Attractive	41.0	39.4	42.9	29.7	39.2	33.7	43.7	23.0	29.6			
Neither Attractive Nor Unattractive	23.0	27.3	23.1	29.7	19.0	39.8	31.2	46.0	41.4			
Moderately Unattractive	16.0	11.1	15.4	15.4	19.0	14.5	10.9	19.8	18.5			
Very Attractive	4.0	3.0	6.6	6.6	13.9	4.8	5.1	7.1	5.6			
Total	100	100	100	100	100	100	100	100	100			

TABLE B-15. Aroma of Food

Percent Response

	Ward Patients				Ambulatory Patients				Staff			
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Very Pleasant	19.6	17.3	10.0	22.0	11.4	17.1	8.8	5.4	4.6			
Moderately Pleasant	38.1	35.7	45.6	37.4	27.8	42.7	33.2	25.2	27.8			
Neither Pleasant Nor Unpleasant	30.9	28.6	33.3	30.8	35.4	36.6	36.7	45.0	51.1			
Moderately Unpleasant	8.2	15.3	6.7	5.5	16.5	2.4	15.3	20.4	13.5			
Very Unpleasant	3.1	3.1	4.4	4.4	8.9	1.2	5.9	3.9	3.0			
Total	100	100	100	100	100	100	100	100	100			

TABLE B-16. Variety of Items to Select

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Too Large	0.0	1.0	2.2	5.5	2.5	1.2	1.9	0.6	0.5
Moderately Large	26.3	20.6	24.4	19.8	24.1	27.7	23.1	16.1	14.9
Neither Large Nor Small	59.6	59.8	50.0	46.2	31.6	39.8	45.8	38.2	36.5
Moderately Small	10.1	13.4	11.1	20.9	25.3	22.9	19.8	33.4	29.5
Too Small	4.0	5.2	12.2	7.7	16.5	8.4	9.4	11.6	18.6
Total	100	100	100	100	100	100	100	100	100

TABLE B-17. Seasoning of Food

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Too Bland	16.3	20.0	20.5	19.5	26.7	10.0	18.6	22.6	23.8
Moderately Bland	30.6	36.8	40.9	28.7	34.7	30.0	35.8	50.4	40.2
Just Right	50.0	40.0	32.9	44.8	33.3	48.8	39.1	20.5	28.0
Moderately	2.0	1.1	3.4	5.7	1.3	10.0	5.9	5.6	4.4
Too Spicy	1.0	2.1	2.3	1.1	4.0	1.2	0.5	0.9	3.6
Total	100	100	100	100	100	100	100	100	100

TABLE B-18. Size of Food Portions

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Too Large	5.1	4.3	5.7	4.7	2.7	3.7	1.9	0.6	1.6
Moderately Large	8.1	10.6	16.1	22.4	9.3	15.9	7.5	5.4	3.8
Just Right	62.6	60.6	50.6	58.8	48.0	50.0	60.0	45.7	40.3
Moderately Small	20.2	19.1	19.5	8.2	14.7	26.8	22.1	31.9	32.2
Too Small	4.0	5.3	8.0	5.9	25.3	3.7	8.5	16.4	22.2
Total	100	100	100	100	100	100	100	100	100

TABLE B-19. Cleanliness of Dishes and Silverware

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Very Clean	56.6	51.5	52.9	34.1	16.0	48.1	20.5	4.5	21.8
Moderately Clean	15.2	18.6	14.9	20.0	28.0	11.1	22.7	20.7	33.0
Clean	23.2	24.7	25.3	27.1	32.0	37.0	36.5	38.0	37.9
Moderately Dirty	4.0	4.1	5.7	16.5	14.7	3.7	16.5	26.8	5.7
Very Dirty	1.0	1.0	1.1	2.4	9.3	0.0	3.8	10.5	1.6
Total	100	100	100	100	100	100	100	100	100

TABLE B-20. Attractiveness of Dishes, Silverware and Trays

	Percent Response									
	Ward Patients				Ambulatory Patients				Staff	
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Staff 3 Months %
Very Attractive	33.3	21.1	18.2	6.9	7.9	6.1	3.2	2.4	2.5	
Moderately Attractive	32.3	29.5	34.1	34.5	19.7	28.0	14.4	13.9	15.0	
Neither Attractive Nor Unattractive	27.3	34.7	33.0	41.4	57.9	48.8	55.1	54.5	54.5	
Moderately Unattractive	5.1	9.5	13.6	9.2	5.3	12.2	17.4	21.1	20.7	
Very Unattractive	2.0	5.3	1.1	8.0	9.2	4.9	9.9	8.2	7.4	
Total	100	100	100	100	100	100	100	100	100	100

TABLE B-21. Thoroughness of Cooked Vegetables

	Percent Response									
	Ward Patients			Ambulatory Patients			Staff			
	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %	Post-Contract 9 Months %
Too Overcooked	6.2	4.3	10.3	9.4	17.8	11.5	13.0	16.7	16.7	16.7
Moderately Overcooked	17.5	15.2	17.2	10.6	15.1	15.4	15.2	20.2	21.2	21.2
Neither Overcooked Nor Undercooked	58.8	66.3	56.3	48.2	46.6	47.4	40.4	38.2	38.8	38.8
Moderately Undercooked	11.3	13.0	11.5	25.9	11.0	19.2	22.2	17.4	13.9	13.9
Too Undercooked	6.2	1.1	4.6	5.9	9.6	6.4	9.1	7.6	9.3	9.3
Total	100	100	100	100	100	100	100	100	100	100

TABLE B-22. Tenderness of Meat

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Too Tough	6.1	8.4	11.4	8.1	18.7	14.8	6.5	14.2	15.5
Moderately Tough	12.1	27.4	26.1	19.8	28.0	19.8	32.1	27.2	31.0
Neither Tough	36.4	30.5	30.7	37.2	32.0	43.2	39.9	42.0	36.6
Moderately Tender	45.5	31.6	30.7	34.9	20.0	21.0	21.3	15.7	16.3
Too Tender	0.0	2.1	1.1	0.0	1.3	1.2	0.3	0.9	0.6
Total	100	100	100	100	100	100	100	100	100

TABLE B-23. Hot Foods at Temperature Liked

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Yes	80.2	57.7	52.9	66.3	59.2	62.2	62.7	59.1	53.6
No	19.9	42.3	47.1	33.7	40.8	37.8	37.3	40.9	46.2
Total	100	100	100	100	100	100	100	100	100

TABLE B-24. Cold Foods at Temperature Liked

Percent Response

	Ward Patients			Ambulatory Patients			Staff		
	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %	Pre-Contract %	3 Months %	Post-Contract 9 Months %
Yes	80.2	81.8	75.9	91.2	78.9	87.7	83.0	77.6	81.6
No	19.8	18.2	24.1	8.8	21.1	12.3	17.0	22.4	18.4
Total	100	100	100	100	100	100	100	100	100

TABLE B-25. FEELING AT THE MOMENT
PERCENT RESPONSE

	WARD PATIENTS				AMBULATORY PATIENTS				STAFF	
	PRE- CONTRACT %	3 MONTHS %	POST-CONTRACT 9 MONTHS %		PRE- CONTRACT %	3 MONTHS %	POST-CONTRACT 9 MONTHS %		PRE- CONTRACT %	POST-CONTRACT 3 MONTHS 9 MONTHS %
	13.5	11.2	10.1		25.6	12.0	8.6		12.0	9.0 9.7
	33.3	36.7	36.0		33.3	36.0	38.3		40.4	31.6 30.5
	39.6	39.8	36.0		30.0	30.7	40.7		32.2	35.2 38.4
	10.4	12.2	14.6		6.7	9.3	7.4		9.6	15.2 13.2
	3.1	0.0	3.4		4.4	12.0	4.9		5.9	9.0 8.1
TOTAL	100	100	100		100	100	100		100	100 100

TABLE B-26. Enough Silverware and Napkins Received (Ward)

	Percent Response		
	Pre-Contract	Post-Contract	Post-Contract
	%	3 Months %	9 Months %
Yes	90.2	92.9	98.8
No	9.8	7.1	1.2
Total	100	100	100

TABLE B-27. Received All Food Items Ordered (Ward)

	Percent Response		
	Pre-Contract %	Post-Contract 3 Months %	Post-Contract 9 Months %
Yes	81.4	72.2	73.7
No	18.6	27.8	26.3
Total	100	100	100