

A Cost-effectiveness Study for the Contract Management of the Hospital Foodservice Dishwashing Work

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(Received January 10, 1995)

병원급식소의 세정작업 위탁관리에 관한 비용효과 분석 연구

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(1995년 1월 10일 접수)

요 약

본 연구의 목적은 병원급식소의 세정작업의 효율적 관리를 위하여 위탁 전과 후의 비용효과를 비교하고 자가운영과 위탁운영체제의 세정담당 종업원들의 직무만족도를 비교하여 그 비용효율성을 분석하는데 있다. 본 연구의 결과에 의하면, 세정작업의 위탁관리로 다음과 같은 잇점을 기대할 수 있었다. 첫째, 호봉이 낮고 적은 수의 종업원 이용으로 인건비의 절감을 기대할 수 있었으며, 둘째, 봉급에 관한 항목을 제외한 다른 항목에 관해서는 자가운영과 위탁운영 체제의 세정담당 종업원들의 직무만족도에 유의적 차이가 없는 것으로 나타났으며, 세제, 작업일정이나 인사배치에 있어서의 용이함으로 나타났다. 이 연구 결과를 기초로 병원급식소의 위탁관리 프로그램에 관한 지속적인 평가와 개발에 관한 연구가 이루어져야 할 것이다.

I. Introduction

The operation of foodservices in today's hospital is big business; it is important and expensive. As such, hospital managers must carefully examine all aspects of and alternatives for operation of the foodservice program to ensure that cost containment and all other dietary goals are attained¹⁾. Historically, hospital foodservices have used their own administrative personnel to manage all aspects of their dietary services. However, foodservice will see the great growth in contracts²⁻⁵⁾.

Feinberg and Traska (1985) surveyed management contract plans of 168 hospitals in the U.S.A. The results of the study showed that almost 14 percent of hospitals responding to the survey use outside contractors for foodservice and about 24 percent expect to use outside management in the future⁶⁾.

Recent commentaries have stressed that dietetic professionals need to become more proficient in the area of management. Several researchers report ad-

vantages and disadvantages of contract management in foodservice operations⁶⁻⁹⁾. Major advantages were cost savings and easier labor control; one disadvantage was less quality control with contract management because of insufficient programs of foodservice management companies. Therefore, several studies have considered partial contract management programs for foodservice operations¹⁰⁻¹²⁾.

The purpose of this study was to examine the effective management of dishwashing works at hospital foodservices. Special objectives were to: (1) analyze cost-benefit of contract management services for dishwashing works; and (2) compare job satisfaction of fully employed dishwashing and production workers by the institution with that of part-time dishwashing and production workers employed by the foodservice contract company.

II. Sample Background

A hospital dietetic department with 550-beds in

Seoul, Korea, has served 4,200 (63%) meals per month for patients and 2,400 (37%) meals per month for employees. This dietetic department has 62 employees for foodservice. Due to increasing 230 beds this year, dietetic department has planned contract management programs with one foodservice contract company for the dishwashing area. Current dishwashing workers have been employed almost 10 years in this institution and have complained about their jobs. The results of this study was based on the data of this institution in March, 1994.

The foodservice contract company in this study has managed production, distribution, and dishwashing works for one hospital dietetic department in Seoul and seven hospital dietetic departments in Kyung-Sang Do with over 200 employees.

III. Method

In Phase I, the cost benefit with the contract management program for the dishwashing work was analyzed. Job and time analyses were conducted by observing the dishwashing work during three days. Labor costs were calculated based on job and time analyses for the dishwashing work and compared with that of foodservice contract company labor costs.

In Phase II, the survey was conducted to compare job satisfaction of institution dishwashing workers with foodservice company workers. The questionnaire

measured satisfaction for work itself, pay, opportunity of promotion, and co-workers. The questionnaire was developed based on the Job Descriptive Index (JDI). Questionnaires were distributed to 15 cooks and 15 dishwashing workers in the institution and 16 cooks and 54 dishwashing workers in the foodservice contract company. The SAS¹³⁾ program was used to analyze mean and t-test results between institution operation and foodservice contract company workers.

IV. Results and Discussion

1. Job analysis of the institution dishwashing work

Table 1 shows characteristics of the hospital foodservice system. This institution used about 11,400 tablewares per day. Average 13 tablewares per one patient meal and 7 tablewares per one employee meal were used.

The results of job analysis are shown in Table 2. For dishwashing work area, 16 workers (26% of total foodservice employees) were working by two shifts (first shift; 06:00~14:00 and second shift; 12:00~20:00). Dishwashing workers charged for distribution and service addition to dishwashing work. One dishwash-machine was stored in the production area and charged for cleaning all tablewares. It was consisted of three tanks, was 7.3 meters, and speeded two miles/minutes. For each meal period, including patient

Table 1. Characteristics of the sample

	patient meal	employee meal
service time		
breakfast	7:40~ 8:30	7:00~ 8:00
lunch	12:40~13:30	12:00~14:00
dinner	17:30~18:20	18:00~20:00
meal counts/day	1,143	744
no. of tablewares/day	15,088	3,182
no. of tablewares/meal	13.2	7.0
weight of tableware/day	1,664 kg	1,148 kg

Table 2. Characteristics of dishwashing system

	patient meal	employee meal
distribution method	using carts and elevators	using carts
sterilization method	using antiseptic solution in sinks	-
storage method	baskets with a cloth-wrapper	tableware storage

Table 3. Time analysis of dishwashing works

	time	no. of workers	total minutes	
			patient	employee
breakfast	9:00~10:25 (85 min.)	8	660	20
lunch	12:20~13:45 (85 min.)	4		340
	14:10~15:20 (70 min.)	8	500	60
dinner	18:30~19:00 (30 min.)	3		90
	19:00~20:00 (60 min.)	10	600	
			1,760	510

Table 4. Job analysis of dishwashing works

	patient meal		employee meal	
	mean	std.dev.	mean	std.dev.
done by dishwash machine				
per day	1,119.0 min.	55.0 min.	247.7 min.	51.7 min.
per meal period	373.1	18.4	82.6	17.3
per 100 tablewares	13.6	0.7	7.8	1.6
done by workers				
per day	303.3 min.	68.7 min.	63.3 min.	10.0 min.
per meal period	101.1	22.9	21.1	3.4
per 100 tablewares	3.7	0.8	2.0	0.3
no. of machine rotation				
per day	372.7 times		82.6 times	
per meal period	124.4		27.5	
per 100 tablewares	4.5		2.6	

and employee meals, dishwashing workers were divided into four teams with two partners. For breakfast and lunch, eight workers were responsible for tablewares moving, first cleaning, sterilizing, and cart moving by team work. Ten workers charged for dinner cleaning.

Table 3 shows the results of time analysis of dishwashing works. For breakfast, eight workers were dishwashing during 85 minutes. A total of 680 minutes were taken. Two of them were dishwashing for employee meals during ten minutes. For lunch, four workers were performing for employee meals during 85 minutes and then eight workers were dishwashing for patient meals during 70 minutes. Four of them were working for remaining employee meals during ten minutes. For dinner period, three workers dishwashing for employee meals during 30 minutes and then ten workers were performing for patient meals and remaining employee meals during 60 minutes.

According to the results of this study, a total of

16 workers charged for one day dishwashing works. A total of 2,270 minutes (37.8 hours) were taken: a total of 1,760 minutes (27.1 hours) for patient meals and a total of 510 minutes (8.7 hours) for employee meals. One dishwashing worker was dishwashing during 142 minutes per one day. The results suggested five workers could dishwash for all meals within 7.56 hours. However, in this institution, 16 workers were dishwashing for all meals by two shifts. An average monthly wage including bonus per one dishwashing workers was about \$ 1,200 (₩ 960,000).

The results of job analysis for dishwash-machine and dishwashing workers during three days are shown in Table 4. A total of 1733.7 minutes was taken for one day dishwashing; a total of 577.9 minutes was taken for each meal period; and a total of 15.2 minutes was taken for 100 tableware cleaning. The results suggested a total of 79% of dishwashing works was done by a dishwash-machine. Three minutes were taken for one dishwash-machine rotation.

Table 5. Estimated benefits and costs during ten years

year	year 1	year 10
benefits		
labor costs/year		
institution	\$ 79,678 (₩ 63,742,400)	\$ 102,497 (₩ 81,997,600)
contract company	\$ 76,342 (₩ 61,073,600)	\$ 86,799 (₩ 69,439,200)
labor savings/year	\$ 3,336 (₩ 2,268,800)	\$ 15,698 (₩ 12,558,400)

Table 6. Estimated benefits in current situation

	institution	foodservice company	difference
benefits			
labor savings/year	\$ 102,497 (₩ 81,997,600)	\$ 76,342 (₩ 61,073,600)	\$ 26,155 (₩ 20,924,000)
operating costs			
tableware purchasing		\$ 10,325 (₩ 8,260,000)	(\$ 10,325) (₩ 8,260,000)
detergent cost	\$ 6,876 (₩ 5,500,800)	\$ 6,876 (₩ 5,500,800)	
tableware loss cost		\$ 723 (₩ 578,400)	(\$ 723) (₩ 578,400)
net benefits/year			\$ 15,107 (₩ 12,085,600)
cost-benefit ratio			1.37

A total of 455 times was rotated. The cost of dish-wash-machine detergent per one day was \$ 19.1 (₩ 15,280).

2. Job analysis of the foodservice contract company dishwashing work

If the institution dishwashing work was managed by contracts, seven workers of foodservice contract company could perform dishwashing works from 12:00 to 21:00 instead of 16 institution workers. Monthly wage including bonus for one worker was \$ 908.8 (₩ 727,040). The results suggested the institution need more tablewares with contract management because contract workers started working from noon. The cost of new tablewares was calculated to \$ 10,325 (₩ 8,260,000).

3. Cost-benefit analysis

Estimated benefits of the foodservice contract company management over the institution management were shown in Table 5. At first year, labor saving was \$ 3,336 (₩ 2,268,800); however, at 10th year,

labor saving was \$ 15,698 (₩ 12,558,400) because the institution workers' wages were increased higher proportion than foodservice contract company workers' because of higher salary step.

If the current dishwashing work system swithes to the contract management, this institution's net benefits would be \$ 15,106 (₩ 12,084,800) (Table 6). Cost-benefit ratio was 1.37. The results of this study suggest dishwashing works should be managed by contracts in the current situation.

4. Job satisfaction

Table 7 shows mean scores of various job satisfaction sub-scales between dishwashing workers and production workers in the institution as well as the foodservice contract company. In the institution, dishwashing workers were significantly less satisfied with work itself than production workers ($p < .05$). In the foodservice contract company, dishwashing workers were significantly less satisfied with their pay than production workers ($p < .001$). This result appeared to be due to simple and dirty characteristics of the

Table 7. Comparing job satisfaction mean scores of dishwashing with production workers.

	institution					foodservice company				
	dishwashing		production		t	dishwashing		production		t
	n	mean	n	mean		n	mean	n	mean	
work itself	12	18.6	14	29.9	24.0*	53	20.9	16	24.4	67.0
pay	12	5.2	13	6.1	23.0	52	10.1	16	15.6	66.0***
promotion	13	5.3	15	4.8	26.0	54	6.5	16	6.0	68.0
co-workers	14	38.1	13	39.8	25.0	49	34.3	15	31.4	62.0

* $p < .05$, *** $p < .001$ **Table 8.** Comparing job satisfaction mean scores of institution with foodservice contract company employees

	dishwashing					production				
	institution		contract co.		t	institution		contract co.		t
	n	mean	n	mean		n	mean	n	mean	
work itself	12	18.6	53	20.9	63.0	14	29.9	16	24.4	28.0
pay	12	5.2	52	10.1	62.0**	13	6.1	16	15.6	27.0***
promotion	13	5.3	54	6.5	65.0	15	4.8	16	6.0	29.0
co-workers	14	38.1	49	34.3	61.0	13	39.8	15	31.4	26.0*

* $p < .05$, ** $p < .01$, *** $p < .001$

dishwashing work.

Table 8 shows differences in job satisfaction mean scores between institution workers and foodservice contract company workers for dishwashing and production work. Regardless of the type of job, institution workers were significantly less satisfied with their pay than foodservice contract company workers ($p < .01$). Also, institution workers were more satisfied with their co-workers than foodservice contract company workers ($p < .05$). This result appeared to be due to a high level of group identity of institution workers.

V. Conclusions

The arguments for and against the use of contract companies or institutional foodservices involve economies of scale, control of operations, and management expertise⁵. According to the results of this study, several advantages were determined with contract dishwashing management: (1) labor cost savings due to smaller numbers of dishwashing workers and lower salary step; (2) no significant differences in job satisfaction sub-scales between institution workers and foodservice contract company workers except for

the pay; and (3) easier labor control for job scheduling and staffing. Based on the results of this study, further research should focus on the effectiveness of contract management programs for other area in foodservice operations and the evaluation of contract management programs which could provide cost-effectiveness and dietary goals for the organization.

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