

OUTCOME ANALYSIS OF THE 1991 NATIONAL HOSPITAL ACCREDITATION SURVEY

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The Health Department of R.O.C. performed the Hospital Accreditation Program again in 1991 for evaluating the four levels of accredited hospitals. The data from this program were used to explore: 1. the score distribution and accreditation rate among variable accreditation levels of hospitals, 2. the passing rate among each accreditation level of hospitals, 3. the cutting boundary of each accreditation level for each studied item, 4. the shortcomings analysis among four different level of hospitals, etc. Review of this program has provided several findings: 1. The score distributions of most subitems don't appear to be normal, while that of total seems to be more symmetric, 2. The average passing rate is 71%, with the highest 83.3% of regional hospital, lowest 63.6% of the district teaching hospital, 3. The defect analysis reveals that the district non-teaching hospital have the no. of defects, less than that of district teaching, medical center and regional hospitals.

In short, if hospitals are allowed to develop its own specialty character, the accreditation consideration should not be based on total score. Instead, the specialized subitem scores should be heavily weighted. However, if general hospitals are advocated by policy, the accreditation concern based on total score seems suitable. (J Natl Public Health Assoc (ROC): 1994; 13(6): 459-472)

Key words: *hospital accreditation, score distribution, accreditation rate, accreditation level, reliability and validity of the forms*

INTRODUCTION

The first (teaching) hospital accreditation survey was held in 1978 by the Ministry of Education in Taiwan. This survey aimed at selecting qualified hospitals for residency and internship training. The teaching hospital accreditation certificate was valid for two years [1-6].

The Medical Care Act was approved in 1986 for authorizing the National Health De-

partment and the Ministry of Education to undertake the hospital accreditation program whenever necessary [6-11]. The chief purpose of the Act lied in evaluating the overall capability of providing medical care in each hospital [6,7]. Ten major functional items which would affect the medical care quality of a hospital were therefore studied, i.e. 1) administrative services, functional safety and sanitation, 2) surgical services, 3) internal medical services, 4) medical laboratory services, 5) radiological services, 6) nursing services, 7) phar-

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maceutical services, 8) emergency services, 9) teaching facilities and activities and 10) residency and internship training.

The total score is composed of two parts, i.e. hospital accreditation and teaching accreditation. Teaching accreditation assesses last two items viz., teaching facilities and activities (item 9), and residency and internship training (item 10). These two items are considered as being of equal importance in constructing the teaching accreditation subscore. For the other eight items, they are incorporated into hospital accreditation subscore, according to the following weighting system (20/120, 15/120, 15/120, 10/120, 10/120, 20/120, 10/120, 20/120) in sequence. The hospital accreditation subscore is then integrated with teaching accreditation subscore in constructing the hospital accreditation total score by the ratio of 1:1, 2:1 and 3:1 for teaching hospital, regional hospital and district teaching hospital, respectively. For a nonteaching hospital, since teaching accreditation was not evaluated, its total score is only composed of the eight items of the hospital accreditation subscores [12].

Four ordered levels of accreditation are set up for application, i.e. medical centers, regional hospitals, district teaching hospitals and district nonteaching hospitals. A hospital may apply for either one of the four levels. If it fails to comply with the standards of the level for which it applies, the hospital may drop to the next level, or it may be tentatively qualified in a condition in which that improvement of the unpassed items should reach the established standard in an assigned period. Three possible decisions after evaluation consequently arise, i.e. accredited, conditional accredited and non-accredited of the applied level [8,10-12].

The on-site survey generally takes two hours and a half to five hours depending on the size of the hospitals. This survey was undertaken by the Hospital Accreditation Survey Team which was organized by the Department of Health. The members in the survey team were specialists appointed by the Health Department. Prior trainings were provided to these specialists for increasing the consensus on evaluation principles and procedures; but, a survey manual which would explain the

subitems was not prepared [8,10-13].

Information gathered from three kind of forms was utilized during the whole process of hospital accreditation. Those are "hospital accreditation survey form" (HASF), the "opinion form" (OF), and the "hospital survey profile" (HSP). The last one was performed by the hospitals themselves, the former two were completed by survey team members. These forms were all designed by experts in medical operations. The HASF is the principal source of obtaining information for assigning the suitable level to a hospital; the OF is for surveyors to record the defects of a hospital they observed and to propose suggestions. The HSP was designed for self-evaluation of hospitals themselves and also for surveyors' reference. The information from HSP has little to do with the decision of accreditation.

The National Department of Health, upon arriving at the accreditation decision, would then announce the results of accreditation survey and suggestions to the participating hospitals [8,10-12].

Both HASF and HSP have two versions: one version is for medical centers and regional hospitals and the other is for district teaching and district non-teaching hospitals. Even in the same version of HASF, the weights of subitems are slightly different. The following analysis of HASF neglects these slight differences within the same version. Data collected from the two versions are separately analyzed (medical centers and regional hospitals vs district teaching and district non-teaching hospitals).

The accreditation system in Taiwan was reviewed in this paper via the recent data collected by the Health Department. Three aspects were specially focused upon, i.e. 1) assessing the accreditation rate and the cutting points for the classification of four levels of accredited hospitals based on the total score and the scores of ten main items in hospitals, 2) reviewing the shortcomings emerging from the opinion form with respect to each of the main items for the various accredited hospitals in levels, and 3) analyzing personnel staffing level, facility installation level (static operation) and amount of services (dynamic operations)

for the four levels of the accredited hospitals.

MATERIALS AND METHODS

The data base used included a hospital accreditation survey form, hospital survey profile and opinion form. Three forms were drawn for each of the accreditation level hospital data to be put into a single file for further analysis.

Data from HSP (self-reviewing) are put into comparison with the data (team-reviewing) of the four classified hospitals in both static and dynamic operational analysis. Reviewing the shortcomings is performed by combining the opinion form with the accreditation results of hospitals. Assessing the accreditation rate and the cutting points for the classification of accredited hospitals exploit the HASF and the result of classifying hospitals.

The statistical methods used here are descriptive statistics, one-way ANOVA,

Kruskal-Wallis K-sample test, and rank correlation analysis. Computations are undertaken by SAS, PC version.

RESULTS

The scoring distributions of the four levels of accredited hospitals

The respective itemized and total score distributions for the four levels of accredited hospitals are drawn for analyzing the appropriateness of using total score in making an accreditation decision (e.g. Figs. 1-6). Most of the medical centers, regional hospitals and district teaching hospitals apparently depart from the normal distribution, while district non-teaching hospitals indicate a better shape approaching the normal curve.

Better symmetrical shapes are observed in Figs. 5, and 6 to occur whenever respective items are pooled into the total score.

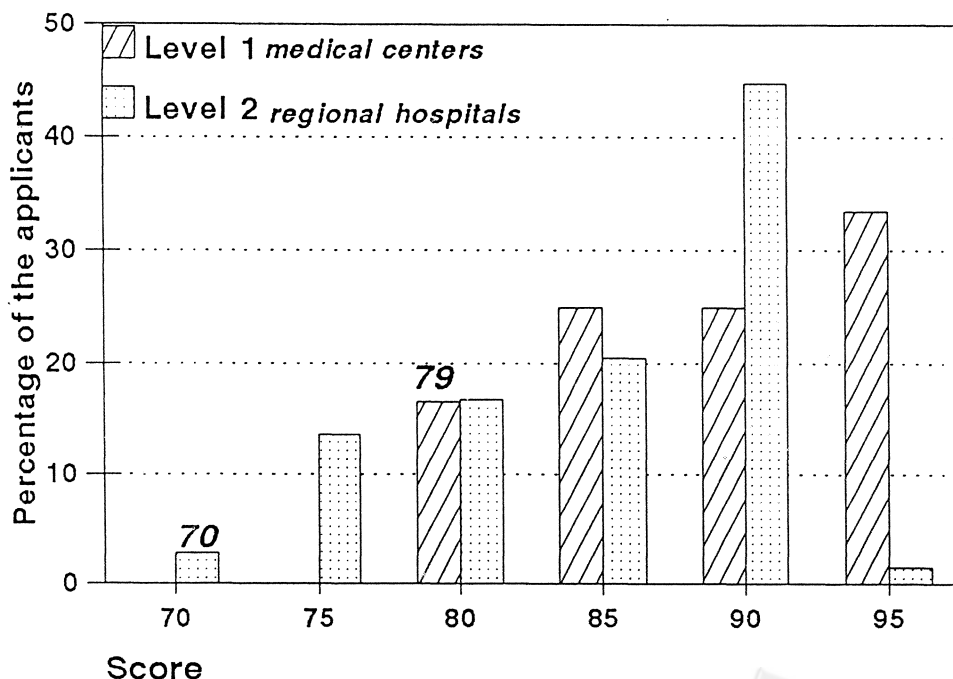


Fig. 1. The score distributions of surgical services item are drawn for the level 1 (N=10) and 2 (N=41) hospitals. 79 and 70 denote the lowest accredited scores (LAS) of level 1 and level 2 hospitals respectively.

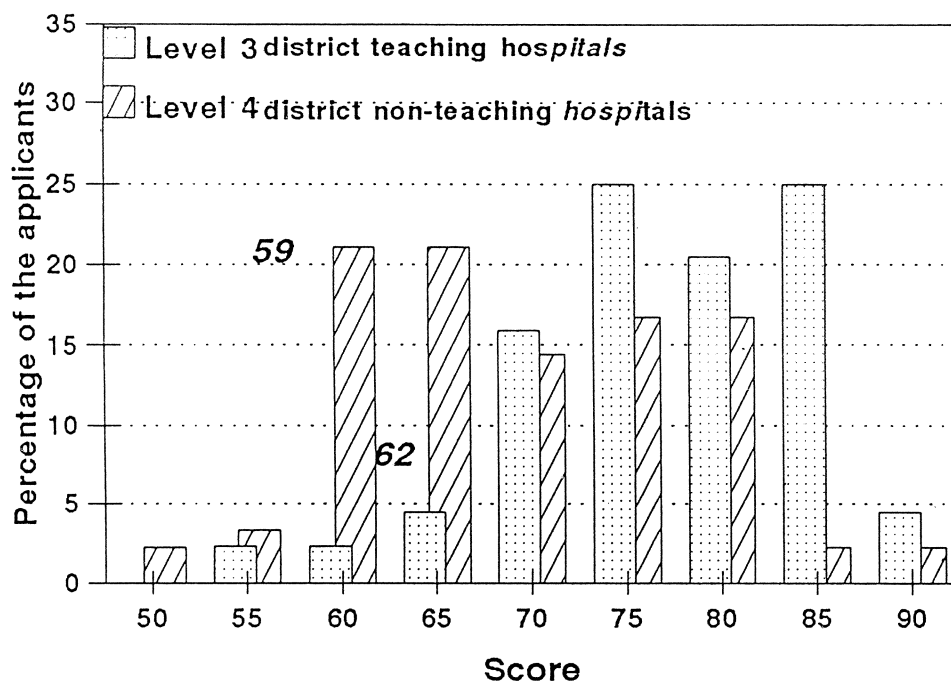


Fig. 2. The score distributions of medicine services item are drawn for the level 3 (N=32) and 4 (N=93) hospitals. The least accredited score of the level 3 hospitals is 62 and that of the level 4 is 59.

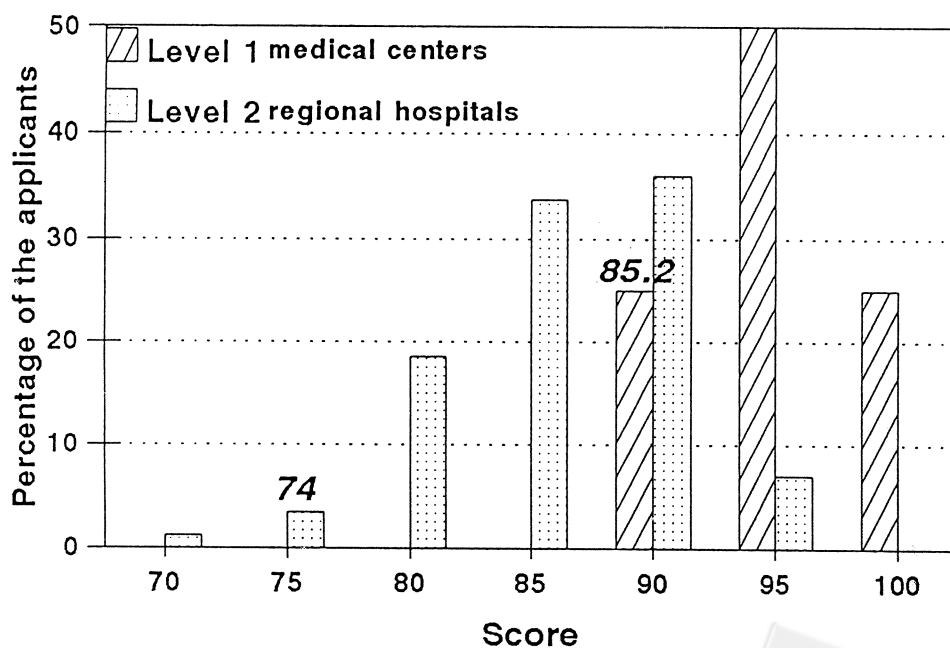


Fig. 3. The score distributions of administrative, functional safety and sanitation item are drawn for the level 1 (N=10) and 2 (N=41) hospitals. The least accredited score of the level 1 hospitals is 85.2 and that of the level 2 is 74.

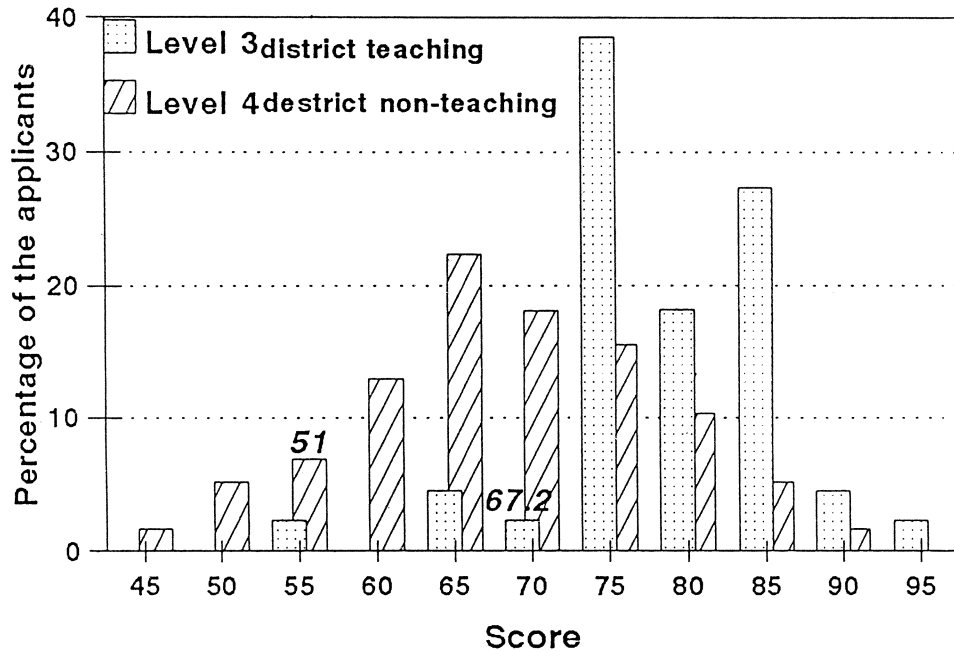


Fig. 4. The score distributions of administrative, functional safety and sanitation items are drawn for the level 3 (N=32) and 4 (N=93) hospitals. The least accreditation scores of district teaching hospitals and district non-teaching hospitals are 67.2 and 51 respectively.

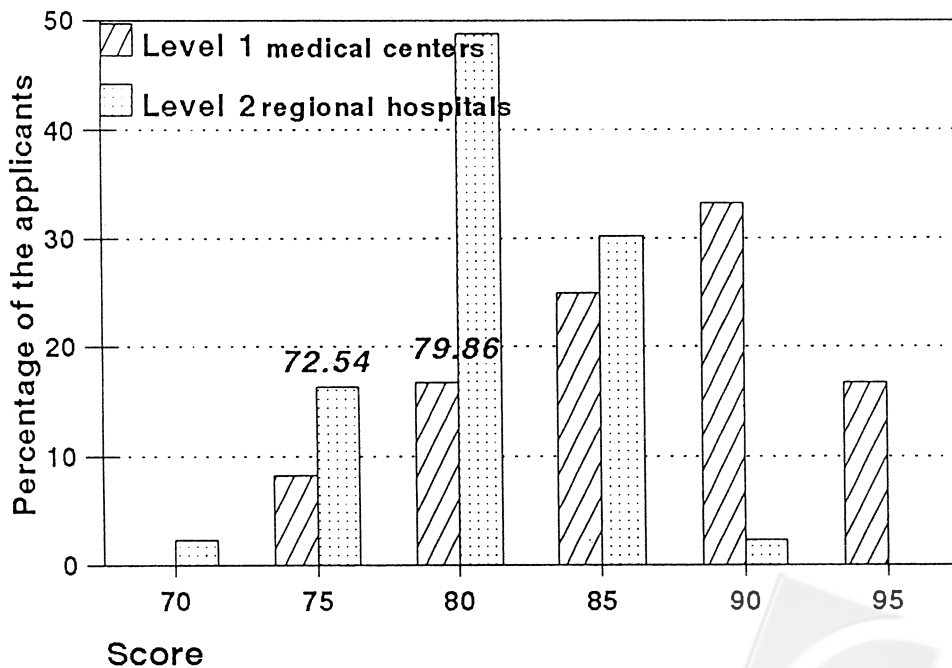


Fig. 5. The total score distributions are drawn for the level 1 (N=10) and 2 (N=41) hospitals.

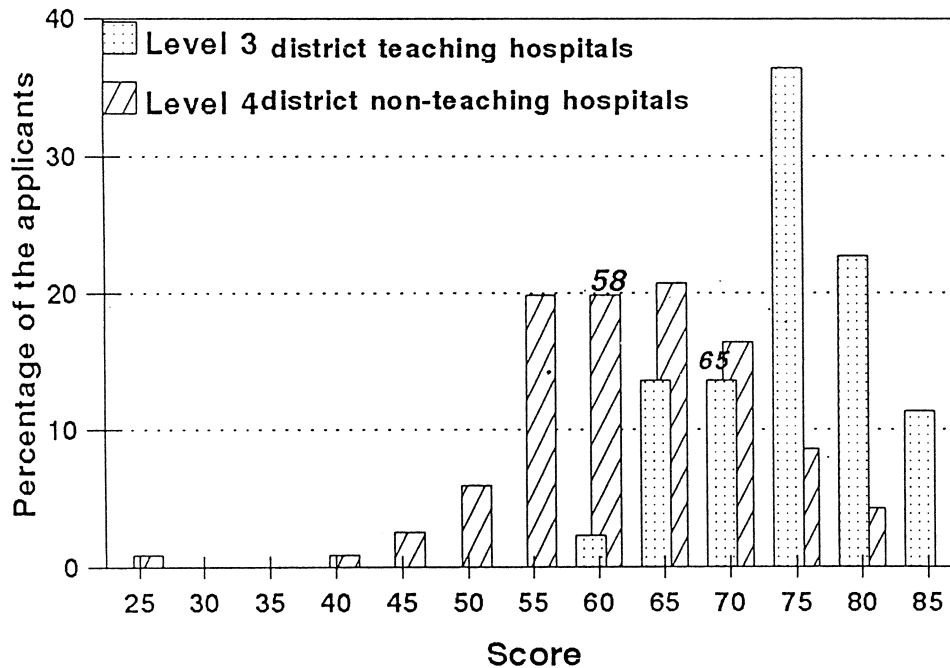


Fig. 6. The total score distributions are drawn for the level 3 (N=32) and 4 (N=93) hospitals.

The accreditation rate across different accreditation status

12,45,44,116 hospitals have applied for the four levels of accredited hospitals: medical center (level I), regional hospital (level II), district teaching hospital (level III) and district non-teaching hospital (level IV), respectively. The accreditation rates for the four-level hospitals are 83.33%, 86.70% 63.64%, 66.38%, respectively. The overall accredited rate is 71.0% (Table 1).

The cutting point of each accredited level in each item

Table 2 lists the cutting point (least accredited score) and percentage of applicants below in each item across four accreditation levels. Pharmaceutical services, medical laboratory services and nursing services are indicated in this table to be the primary factors which affect the level of medical centers and regional hospitals to be accredited to. For both district teaching and district non-teaching hospitals,

Table 1. The number of applicants and accredited hospitals among different levels

	No. of applicants	No. of accredited	Conditionally accredited	Non-accredited	Accredited rate
Medical center	12	10	0	0	83.33%
Regional hospitals	45	39	0	0	86.67%
District teaching hospitals	44	28	0	0	63.64%
District non-teaching hospitals	116	77	30	9	66.38%
Totals No.	217	154	30	9	70.97%

Table 2. The cutting point and percentage of applicants below in each item across 4 accreditation levels of hospitals

	Medical centers		Regional hospitals		District teaching hospitals		District non-teaching hospitals	
	LAS	PAB	LAS	PAB	LAS	PAB	LAS	PAB
Administration services functional								
safety and sanitation	85.2	0	74	1.2	67.2	6.8	51	8.6
Surgical services	79	0	70	0	65	7.1 [#]	42	5.1
Internal medicine services	75	0	60	0	62	4.5	59	8.9 [#]
Medical laboratory services	72.73	8.3	42.82	0	55.27	2.3	16.8	5.2
Radiology services	61.5	0	63	2.3	58	2.3	40	4.3
Nursing services	77	4.2	60	0	56.5	4.5	35.3	2.6
Pharmaceutical services	72	16.7 [#]	51	4.7 [#]	41	0	28.1	2.6
Teaching facilities & activities	58.95	0	66.57	2.3	52.67	4.5	##	##
Residency & internship training	62.38	0	63.52	0	43.05	2.3	##	##
Emergency services	80	0	57.4	0	55.4	3	28	0
No. of applicants	12		45		44		116	

= The item that have highest percentage of applicants below the least accredited score.

= District "Non-teaching" hospitals do not have items of 'Teaching facilities and activities' and 'Residency and internship training available'.

LAS = Least accredited score; PAB = Percent of applicants below

those items such as administrative services, functional safety and sanitation, surgical services, internal medicine services should be more carefully evaluated by the hospitals themselves in order to reach the accuracy in self-designation of a accreditation level.

The static operations and dynamic operations (personnel staffing, facility installation and services level) across hospitals of different accreditation levels

The amount of services, staffing level of various kinds of personnels, and the facilities installation in hospitals are those interesting items in the analysis of hospital operations. The analysis of amount of services is listed in Table 3. Significant discrepancies are found between any pair of two accreditation levels for items such as number of ambulatory visits, number of emergency services, hospitalized patient days, number of operations, number of deliveries, number of Cesarean sections, aver-

age ambulatory visits and average emergency services.

No significant differences arise in length of stay, for any pair of two accreditation levels. The average hospitalized patients per diem reveals no significant discrepancy between medical centers and regional hospitals.

The staffing level of various kinds of personnels between any pair of accreditation levels contain significant differences except for some pairs of levels for nuclear technology personnel and nutrient personnel (Table 4). Nuclear technology personnels apparently aggregate most in medical centers.

The hospital facility analysis exhibits that significant differences arise between any two of the four accreditation levels except for some pairs of the terms of the restoration beds and infant care beds (Table 5). The installation number of infant care beds is not significantly different between regional hospitals and district teaching hospitals; while for the number

Table 3. The amount of services for different accreditation levels

Medical centers			Regional hospitals			District teaching H.			District nonteaching H.			P-value	X ²	Scheffe's posterior test
N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD			
1. 10	1049122.90	610176.25	41	315585.37	147715.06	32	145904.69	82004.97	92	59922.76	51025.38	138.17*	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
2. 10	72840	42881.33	41	25111.73	15132.78	30	794.87	378.05	85	0.45	0.40	127.35	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
3. 10	428982.40	216114.45	41	103147.80	46461.40	32	38469.50	22231.28	89	16436.99	29691.59	139.23	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
4. 10	24766.20	13143.09	41	6126.12	4083.67	30	2349.27	2088.15	80	644.46	778.84	126.10	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
5. 10	3444.40	2414.54	41	1222.61	968.11	28	906.18	1359.44	35	287.77	452.73	54.20	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
6. 10	868.80	467.00	41	346.37	243.12	28	245.43	372.04	32	95.22	132.45	53.58	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
7. 10	26.80	5.65	40	27.93	9.72	28	29.48	15.61	30	24.96	16.86	10.40		1,4;2,3;3,4;
8. 10	3896.51	2247.80	41	1147.23	547.14	32	519.05	291.12	91	220.02	186.18	133.43*	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
9. 10	203.26	114.73	41	70.23	41.91	30	31.15	21.47	84	11.50	21.64	121.99	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
10. 10	628.14	585.72	41	250.87	148.88	32	156.08	373.93	90	45.83	81.70	117.87	P<0.0005	1,3;1,4;2,3;2,4;3,4;
11. 10	87.35	3.72	41	79.76	13.33	32	70.64	15.89	89	64.53	26.37	42.96	P<0.0005	1,2;1,3;1,4;2,3;2,4;
12. 10	11.55	2.35	41	9.34	2.41	32	9.77	5.63	37	25.43	73.87	7.06		
13. 10	2.85	1.14	41	2.17	2.20	28	1.84	2.1	43	2.69	4.97	28.91	P<0.0005	1,3;1,4;2,4;3,4;
14. 10	39.70	35.63	18	3.89	3.25	3	1.67	1.15	11	314.82	722.66	26.65	P<0.0005	1,2;1,3;1,4;2,3;2,4;

1. No. of ambulatory visits per year
2. No. of emergency services per year
3. Hospitalized patient days per year
4. No. of operations per year
5. No. of deliveries per year
- H. = hospitals, # = The Kruskal-Wallis Test (Chi-Square Approximation) is used.
6. No. of cesarean sections per year
7. Cesarean sections rate
8. Average ambulatory visits per diem
9. Average emergency services per diem
10. Average hospitalized patients per diem
11. Bed's occupancy rate
12. Average length of stay
13. Crude death rate
14. Cesarean sections rate

Table 4. The staffing level of various kinds of personnels for different accreditation levels

Medical centers			Regional hospitals			District teaching H.			District nonteaching H.			X ²	P-value	Scheffe's posterior test
N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD			
1. 10	226.40	92.59	41	47.78	17.41	32	20.72	8.25	92	6.82	6.57	158.32 ^a	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
2. 10	241.10	117.89	40	47.70	35.54	30	12.70	12.00	36	5.69	6.51	80.72	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
3. 10	1035.4	509.57	41	195.15	99.94	32	76.91	43.77	91	25.32	26.09	155.24	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
4. 10	60.20	26.86	41	17.15	8.62	32	8.66	4.32	92	3.24	2.64	147.41	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
5. 10	73.90	28.67	41	16.54	10.29	32	6.88	4.72	92	2.35	2.01	153.78	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
6. 10	41.30	17.46	41	8.76	5.35	32	4.16	2.38	86	1.85	1.34	140.68	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
7. 10	22.30	14.54	41	6.49	5.18	19	4.16	5.69	18	1.94	0.94	46.63	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
8. 9	12.44	8.13	9	2	1.22	1	2	0	1	6	0	13.52	P<0.0005	1,2;1,3;1,4;2,4;
9. 9	36.33	26.00	41	12.66	9.15	31	6.77	5.55	88	2.98	2.19	97.17	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
10. 10	11.40	6.38	40	4.38	2.57	32	2.44	1.95	53	2.94	6.69	69.92	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
11. 10	25.40	33.95	41	6.98	8.36	30	3.80	3.45	45	2.22	2.57	49.89	P<0.0005	1,2;1,3;1,4;2,3;3,4;
12. 10	190.50	198.47	38	30.08	29.69	25	10.72	10.63	56	6.27	7.87	62.50	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;
13. 10	372.50	318.31	40	96.45	71.84	32	35.41	25.95	91	11.20	17.73	147.42	P<0.0005	1,2;1,3;1,4;2,3;2,4;3,4;

1. No. of visiting staff	6. No. of medical radiological personnel	11. No. of nutrient personnel
2. No. of resident doctors	7. No. of rehabilitation personnel	12. No. of other technical personnel
3. No. of nursing personnel	8. No. of nuclear technology personnel	13. No. of other administrative personnel
4. No. of pharmaceutical personnel	9. No. of medical record management personnel	
5. No. of medical laboratory personnel	10. No. of social workers	

H = hospitals, @ = The Kruskal-Wallis Test (Chi-Square Approximation) is used.

Table 5. The facilities installation level across different accreditation levels

	Medical centers			Regional hospitals			District teaching H.			District N.T. H.			P-value	Scheffe's posterior test
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD		
No. of ordinary beds	10	1234.10	613.58	41	316.39	136.53	32	133.50	51.78	92	54.51	49.04	151.98 [#]	1,2;1,3;1,4;2,3;2,4;3,4
No. of emergency care beds	10	41.90	34.22	41	10.68	7.24	28	7.21	5.00	63	3.70	2.88	73.00	1,2;1,3;1,4;2,3;2,4;3,4
No. of intensive care beds	10	67.50	37.97	40	14.18	9.71	25	5.12	1.86	20	4.85	2.92	59.58	1,2;1,3;1,4;2,3;2,4;3,4
No. of kidney dialysis beds	10	26.90	20.25	40	10.33	6.92	15	9.73	5.78	17	7	4.85	16.07	1,2;1,3;1,4;2,3;2,4;3,4
No. of restoration beds	10	20.60	11.98	40	5.20	3.21	22	2.59	1.10	58	2.07	1.73	88.22	1,2;1,3;1,4;2,3;2,4;3,4
No. of infant care beds	10	69.30	25.97	41	29.90	19.57	29	24.41	25.07	36	8.83	6.99	54.97	1,2;1,3;1,4;2,3;2,4;3,4

H. = hospitals, N.T. = non-teaching, # = The Kruskal-Wallis Test (Chi-Square Approximation) is used.

Table 6. The mean No. of shortcomings in each item and overall across different accreditation levels

	Medical centers			Regional hospitals			District teaching H.			District nonteaching H.		
	N=10	Mean	%	N=41	Mean	%	N=32	Mean	%	N=93	Mean	%
Administrative services functional safety & sanitation	40	4.0	9.5	397	9.7	16.3	180	5.6	13.3	571	6.1	16.9
Surgical services	39	3.9	9.2	230	5.6	9.5	137	4.3	10.1	394	4.2	11.7
Internal medicine services	12	1.2	2.8	140	3.4	5.7	118	3.7	8.7	319	3.4	9.5
Medical laboratory services	30	3.0	7.1	119	2.9	4.9	97	3.0	7.2	327	3.5	9.7
Radiology services	24	2.4	5.7	100	2.4	4.1	82	2.6	6.1	208	2.2	6.2
Nursing services	49	4.9	11.6	380	9.3	15.6	172	5.4	12.7	631	6.8	18.7
Pharmaceutical services	83	8.3	19.7	382	9.3	15.7	225	7.0	16.7	581	6.2	17.3
Teaching facilities & activities	73	7.3	17.3	268	6.5	11.0	154	4.8	11.4	122	7.6 [#]	3.6
Residency & internship training	46	4.6	10.9	149	3.6	6.1	109	3.4	8.1	75	4.7 [#]	2.2
Emergency services	26	2.6	6.2	271	6.7	11.1	77	2.4	5.7	141	10 ^{##}	4.2
Total	422	42.2	100.0	2436	59.41	100.0	1351	42.2	100.0	3369	32.59	100.0

H. = hospitals, # = N=16; ## = N=14

of restoration beds the non-significant discrepancy again arises between regional hospitals and district teaching hospitals.

The analysis of shortcomings in each item and overall across the four accreditation levels

Based on the mean for each level of hospitals, the district non-teaching hospitals are demonstrated in Table 6 to have the lowest average number of shortcomings (32.59) than the district teaching hospitals (42.20), medical centers (42.20) and regional hospitals (59.41). Items of pharmaceutical services (19.7%), teaching facilities and activities (17.3%) and residency internship training (10.9%) are the primary factors which hold substantial shortcomings in medical centers. Those items which have more shortcomings in regional hospitals are administrative services, functional safety and sanitation (16.3%), pharmaceutical services (15.7%) and nursing services (15.6%).

When number of shortcomings for each item are ranked within each accreditation level, the mean of the coefficient of agreements among each pair of accreditation level is calculated as 0.58. This implies that hospitals in different levels have different patterns of improvement on their defects to some extent.

DISCUSSION

The afore-mentioned score distribution reveals that the qualities of medical care among the accredited hospitals of the same item for the first three levels can not be thought with the normality. These first three levels may be of a high proportion of excellent quality in certain items (e.g. Fig. 1), or they may be of an irregular distribution in certain items (e.g. Fig. 2), etc.

The abnormality of the score distributions for each item also indicates that the qualities of medical cares provided by hospitals in the same level might potentially depend upon the direction of management of each hospitals. Restated, hospitals in the same level have their own specialties to develop. Since better symmetrical shapes are observed in Figs. 5 and 6 whenever respective items are pooled into the

total score, this trend may infer that heterogeneity among items in each hospital may become removed to a certain extent. The final accreditation decision made according to the total score therefore appears to be suitable.

When integrating results of Table 2 with Figs. 3, 4, 33.6 percent of regional hospitals are found to exceed the least accredited score of medical center and 29.4 percent of district non-teaching hospitals exceed the least accredited score of district teaching hospitals. The superficial implication of these percentage figures might possibly arise as there around one-third of regional hospitals or district non-teaching hospitals which can provide the same quality as that of either medical centers or district teaching hospitals, respectively in the item of administrative services, functional safety and sanitation. The truth, in our opinion, should be that the respective multi-forms and multi-items designed for the four accreditation levels of hospitals had confounded the final accreditation decision by the Accreditation Committee with the on-site evaluation by surveyors.

For example, if one surveyor had been assigned to assess two accreditation levels of hospitals (it happens quite frequently), he may have a looser standard when reviewing regional hospitals but a more stringent attitude when reviewing medical centers. This situation can account for why about one third of regional hospitals and district non-teaching hospitals surpass the least accredited score of medical centers and district teaching hospitals respectively. This overlooked confusion may have possibly caused the over-approval rate of accreditation for the three levels of hospitals except for medical centers. This result would only benefit those hospitals applying for accreditation but not damage them.

Clearly, each item or sub-item should have various weights of effect toward the quality of medical care of a hospital. Thus, the current method taking account of shortcomings in each item with equal weight might explain why the mean numbers of shortcomings in the four different hospital levels are quite beyond our expectations (district non-teaching hospitals have the lowest average number of shortcomings).

We should be careful in interpretation of the discrepancies between the static and dynamic operations over hospitals of the four accreditation levels. Some information requested in hospital survey profile are not available, e.g. number of autopsies, crude death rate, etc. Blank data were regarded as unavailable information and have thus been excluded from the analysis. Those hospitals that don't have crude death rate (CDR) data available or have zero may appear to have the highest cured rate, but this explanation is not necessarily true.

Some results coming from the facilities installation level and personnel staffing level analysis are self-explanatory in light of the requirements for being a hospital in one of the four levels by the regulation of Installation Standards of Medical Care Organizations, such as number of regular beds, number of visiting staffs, resident doctors etc [2-5]. Special attention should be paid toward those items which are not required by regulations, and do not provide any significant difference either, e.g. average hospitalized patients per diem, average length of stay, etc.

The indicators used in hospital accreditation survey form are mainly focused on the aspects of hospital structure and operational process. Other indicators related to the effectiveness and efficiency in a hospital management should be added in future study [16]. Making comparisons of effectiveness and efficiency between the public and proprietary hospitals in medical care would definitely be an interesting approach.

The Joint Commission on Accreditation of Healthcare Organizations (Joint Commission of the United States), which until 1986 was known as the Joint Commission on Accreditation of Hospitals (JCAH), has developed standards for various services and facilities through assigning professional and technical advisory committee (PTAC). Being too far ahead of the field makes standards overly demanding and difficult to meet, but merely reflecting the state of development limits progress [17]. From the research result of passing rate in each sub-item and total score, the "ahead of field" passing standard might not be an issue in Taiwan, yet

how to clearly identify the standard in each individual item is the subject.

Not until in 1965, with the passage of Medicare, which specified that Joint Commission accredited facilities were in "deemed status" (eligible) for purpose of Medicare reimbursement in the United States, the importance of a hospital being accredited by the Joint Commission was then greatly enhanced [17]. The causal relationship hold really true in Taiwan, only eligible status and reimbursement level are highly based on accreditation result can the standards set by accreditation committee be taken into seriously account, and the objective of total quality management can be realized.

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REFERENCES

1. Chang MC: On pharmaceutical services of the 1988 hospitals and teaching hospitals accreditation. *Hospitals* 1989; **22**: 29-38. [In Chinese]
2. Department of Health, Executive Yuan, R.O.C.: The Installation Standards for Different Levels of Hospitals on the 1991 Hospitals and Teaching Hospitals Accreditation, 1991. [In Chinese]
3. Department of Health, Executive Yuan, R.O.C.: The Standards of the 1991 Hospitals Accreditation, 1991. [In Chinese]
4. Department of Health, Executive Yuan, R.O.C.: The Standards of the 1991 Teaching Hospitals Accreditation, 1991. [In Chinese]
5. Department of Health, Executive Yuan, R.O.C.: The standards of the emergency services on the 1991 hospitals and teaching hospitals accreditation, 1991. [In Chinese]
6. Department of Health, Executive Yuan, R.O.C.: Medical Care System: Hospital Accreditation. *Public Health in Taiwan Area*, R.O.C.. Apr. 1991; 22-3.

7. Department of Health, Executive Yuan, R.O.C.: Establishment of hospital accreditation system and assurance of health care quality in R.O.C. Administration conference of Executive Yuan, R.O.C., 1991. [In Chinese] surveys. Am J Public Health 1986; **76**(1): 18-22. [In Chinese]
8. Lin SH: On the accreditation survey of medical centers and regional teaching hospitals in R.O.C. MHA thesis, The Institute of Hospital Administration, China Medical College. [In Chinese]
9. Lin SH: On di ease records management of the 1988 hospitals and teaching hospitals accreditation. Hospitals 1989; **22**(4): 204-13. [In Chinese]
10. Tan KY, Chang CE: The accreditation survey of teaching hospitals in R.O.C.. J Med Sci 1985; **6**(2): 115-48. [In Chinese]
11. Tan KY, Chen HH: Introduction to the accreditation criteria of the 4th Teaching Hospital Accreditation. Hospitals 1985; **18**(1): 5. [In Chinese]
12. Department of Health, Executive Yuan, R.O.C.: The Operation Procedures of the 1991 Hospitals and Teaching Hospitals Accreditation in Taiwan Area, 1991. [In Chinese]
13. Fan PY: On the assurance of health quality in psychiatric departments. MHA thesis, The Institute of Hospital Administration, China Medical College. [In Chinese]
14. Chen YC: On nursing services of the 1988 hospitals and teaching hospitals accreditation. Veterans General Hospital Nurs, 1990; **7**(2): 181-91. [In Chinese]
15. U.S. Congress, Office of Technology Assessment: The Quality of Medical Care: Information for Consumers. OTA-H-386, Washington D.C.: U.S.A. Government Printing Office, June 1988; 187-205.
16. Herbert HH: Are public hospitals in New York City inferior to voluntary, nonprofic hospitals? A study of JCAH hospitals
17. Rakich JS, Longest BB, Darr K: Managing Health Services Organizations, The Health Care Delivery System, pp33-95, Health professions press, 1992.



中華民國八十年度醫院評鑑結果之分析

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行政院衛生署所主辦之「八十年度臺灣地區醫院評鑑暨教學醫院評鑑」目的在將受評醫院評為四個等級(分為醫學中心、區域醫院、地區教學醫院、地區非教學醫院四個等級)。本研究旨在分析這次評鑑結果，進而探討：1. 申請各級別醫院在各大項分數及總分之分佈，2. 探究各層級醫院之醫院評鑑通過率，3. 醫院評鑑所用評量表之信度與效度，4. 各類醫院評鑑等級之分項最低標準(及格分數之切點)，5. 各層級醫院之缺點分析等。

由此次醫院評鑑之分析我們發現：1. 各分項評鑑成績之分佈大都不是常態分佈，而總分(各分項之總和)之分佈較對稱，2. 評鑑成績平均通過率為71%，尤以區域醫院最高83.3%，地區教學醫院最低63.6%，3. 評鑑

之信度及效度仍不甚理想，可經由評量表之重新設計及委員之行前說明來改善，4. 由各項最低標準未通過率可了解各層級醫院應努力之方向，5. 缺點數分析反應出地區非教學醫院之缺點數反較地區教學醫院、醫學中心及區域醫院少，顯示缺點之不能以「數目」來計算，應考慮其相對應之權數。

總而言之，1. 政策如鼓勵「專科」醫院之發展或容許各醫院發展其特色則不應以總分作為評鑑之依據，2. 為因應全民健保之需求，目前評鑑合格之地區教學醫院仍嫌不足，應輔導改進，3. 應借助信度之提高，評量表之設計及缺點之分析仍可幫助改善現有制度之效率。(中華衛誌 1994；13(6)：459-472)

關鍵詞：醫院評鑑，分數分佈，評鑑通過率，評鑑等級，評量表之信度及效度

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