



## **Effects of the Hospital Gradation System on Patient Behavior and Satisfaction: An Investigation of Dental Health Care**

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### **Dear Editor-in-Chief**

Hospital gradation systems are used to examine the performance of hospitals to promote the efficient use of medical resources (1). Patient-perceived service quality may differ for differing grades of medical institutions under gradation system, which has been rarely reported. The aim of the present study was to explore the relation between the hospital gradation system and patient perceptions under Taiwanese hospital gradation system. The specialty of dentistry was investigated due to dental care being significantly different from other medical services (2). Dental care is more personal, intimate, and lasting contact with the patient (3). Nevertheless, quality assessment of dental service remains relatively primitive (4). To explore more accurately and objectively assessment of service quality of dental care is necessary. In Taiwan, the National Health Insurance (NHI) system has provided universal and comprehensive health care to the residents at affordable costs since 1995. It utilizes a gradation system that integrates classification with accreditation to promote efficient medical resources utilization. Medical institutions are classified and divided into four grades based on the level of services provision and size of care providers: medical centers, regional hospitals, area hospitals, and basic-level institutions. Medical institutions other than basic-level institutions are required accreditation to provide

quality service to obtain subsidization from Bureau of NHI (5). Dental care, excluding cosmetic services, is covered as part of the benefit package in the comprehensive NHI program of Taiwan. Dental services are provided by dental care centers in the four grades of medical institutions. Patients have freedom of choice of dental service providers with the same co-payment, regardless of the grade of the dental care center. However, in medical centers, dentists are not only tasked with providing clinical services but also participating in teaching and academic research. This has raised the question of whether the dentists' technical skills and the service quality are better at higher-grade dental care centers.

Patient satisfaction is a key determinant of the service quality and can be conceptualized as the difference between a patient's perceptions and their expectations. The SERVQUAL model (6) is commonly used to examine the service quality of health care (7). In this study, the modified SERVQUAL instrument which comprises 21 attributes was used to explore differences in patient-perceived service quality between two types of dental care centers with different grades, namely dentistry departments in medical centers (DMCs) and basic-level dental clinics (DCs). The questionnaire contains three sections. The first two sections measure the patient's expectations and percep-

tions on a 7-point Likert scale from 1 (“strongly disagree”) to 7 (“strongly agree”). The third section of the questionnaire comprises demographics-related questions.

The study population included patients over 20 years of age who visited the dental care center for the first time for any type of treatment and had visited another dentist at least once in the past year. A total of 600 patients from five DMCs and ten DCs participated in the study. The questionnaire covered patient expectations regarding their respective dental care provider before treatment and their ratings of that particular dental service provider after treatment immediately. The difference between patient expectations and their perceptions was termed the quality gap or satisfaction gap.

Data analysis was performed using the SPSS (Version 20.0. IBM. USA). Cronbach’s alpha coefficients were calculated using the valid questionnaires ( $n = 562$ ) and revealed high levels of internal consistency for the items surveyed. Table 1 shows the comparison of the patient expectations (E), perceptions (P), and the quality gaps (P–E) between grades of dental care centers. Our findings show that patient expectations and satisfaction (as measured by quality gap) were different between grades of dental care centers, and the association of some patient characteristics with their satisfaction was significantly.

First, assessing patient expectations, the average expectation scores for DMCs were significantly higher than that for DCs ( $P = 0.0027$ ). This may imply that patients have higher expectations regarding high-grade DMCs than for basic-level DCs. Under the Taiwanese hospital gradation system, dentists in DMCs must provide clinical services as well as participate in teaching and academic research, and this could be the reason why DMCs are expected to offer a higher quality of service compared with DCs.

Second, regarding patient perceptions, the values of quality gap for DCs were much better than that for DMCs. The result revealed that the patient satisfaction with DCs was higher than that with DMCs. This may imply that because of stable

sources of patients, DMCs may pay insufficient attention to patient perceptions of the service quality to earn patient satisfaction. In contrast, DCs strive to provide quality service to gain patient satisfaction and interact with patients to establish positive relationships in the severely competitive environment. However, to offer society better health care services, DMCs and DCs should cooperate rather than compete with each other by implementing an appropriate referral system under the hospital gradation system.

Finally, identifying the relation between factors and patient satisfaction, we found that the overall level of patient satisfaction was significantly associated with patient age and dental health (as measured by number of caries). Patients with poor dental health were less satisfied with their dental care services compared with their healthier counterparts. Elderly patients were particularly less satisfied with their dental care compared with their younger counterparts, suggesting that it is more difficult to fulfill the expectations of elderly patients. Usually, older populations suffer from a number of chronic illnesses in addition to complex dental health problems, and there are considerable numbers of elderly patients with complex needs. Therefore, dental care for elderly patients should be patient-centered rather than procedure-centered, which consequently would be more time-consuming (8). We suggest that training courses in gerodontology should be provided as part of the professional development of practicing dentists and that the government should provide incentives such as a higher reimbursement from the NHI to encourage dentists to provide comprehensive patient-centered services for the elderly.

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**Table 1:** Comparison of the expectations and perceptions between grades of dental care centers

Attribute	DCs			DMCs		
	E	P	P-E <sup>a</sup>	E	P	P-E <sup>a</sup>
1. Up-to-date equipment	6.22	6.22	0.00	6.44	6.13	-0.31 **
2. Clean and hygienic appearance	6.50	6.58	0.08 *	6.49	6.04	-0.45 **
3. Staff always appear neat	6.14	6.61	0.47 **	6.16	6.08	-0.09
4. Meet patient at the promised time	6.16	6.34	0.19 **	6.22	5.54	-0.67 **
5. Maintaining error-free records	6.66	6.53	-0.13 **	6.57	6.17	-0.41 **
6. Staff are professional	6.60	6.61	0.01	6.81	6.36	-0.45 **
7. Can trust all staff	6.41	6.58	0.18 **	6.48	6.16	-0.32 **
8. Respond to query promptly	6.18	6.54	0.36 **	6.28	5.99	-0.30 **
9. Easy to make appointment	5.92	5.96	0.04	6.13	5.60	-0.53 **
10. Sympathetic to problem	6.44	6.53	0.09 *	6.50	6.08	-0.42 **
11. Available for emergency appointments	5.60	5.62	0.02	5.92	5.25	-0.68 **
12. Reliable oral health instructions	6.16	6.28	0.12 *	6.19	5.76	-0.43 **
13. Explain diagnosis and treatment	6.51	6.51	-0.01	6.68	6.19	-0.49 **
14. Instruments sterilized thoroughly	6.92	6.56	-0.36 **	6.85	6.33	-0.52 **
15. Feel safe in the care of surgery staff	6.57	6.54	-0.03	6.59	6.10	-0.49 **
16. Pain control	6.34	6.51	0.17 **	6.36	5.88	-0.48 **
17. Location/parking convenience	5.97	5.74	-0.23 **	5.75	5.67	-0.08
18. Convenient surgery hours	5.76	6.24	0.48 **	6.11	5.70	-0.41 **
19. Willing to help with sincere interest	6.18	6.52	0.34 **	6.20	6.04	-0.16 *
20. Staff are polite	6.20	6.82	0.61 **	6.09	6.01	-0.08
21. Remind patient of the appointment	5.40	5.70	0.30 **	5.46	5.59	0.14 *
Average <sup>b</sup>	6.19	6.36	0.17	6.30	5.93	-0.37

<sup>a</sup>Negative (P-E) values are figured in bold and *t*-test for dependent sample was used to determine the difference between patient's expectations and perception: \**P* < .05, \*\**P* < .01.

<sup>b</sup>Average scores of E, P, and (P-E). Independent sample *t*-test for the difference between patients' expectations from DMCs and DCs: *P* = 0.0027.

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