

Original Article

Promoting the development of tertiary hospitals through satisfaction surveys

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ABSTRACT

Background: It has been reported that there is a positive correlation between job satisfaction and the productivity of staff members. Measuring satisfaction has been widely adopted as an indicator of the medical quality of hospitals. **Methods:** This was a 6-year satisfaction survey from 2014 to 2019 of 11,045 participants, which included outpatients (5609 participants), inpatients (3647 participants), hospital staff (1647 participants), and relevant social institutions (142 participants). The average score of each questionnaire was calculated for the last score. **Results:** The satisfaction scores of outpatients and inpatients gradually increased over the years. Inpatients rated their satisfaction higher than outpatients did. The salary and welfare scores for hospital staff were significantly lower than other indicators. The survey of relevant relevant social institutions showed a wave change trend. **Conclusions:** This study examined feedback on hospital experience and evaluated of the quality of medical administration via six years of hospital satisfaction surveys. The hospital administrative office used the feedback from the surveys to direct substantial administrative work, thereby improving the quality of hospital services and development through satisfaction surveys.

Keywords: Satisfaction surveys; Hospital development

INTRODUCTION

Hospital staff put a lot of effort into routine hospital work. It has been also reported that there is a positive correlation between job satisfaction and the productivity of professionals, including hospital staff.^[1] Feedback from hospital staff is helpful for improving hospital services. The opinions of hospital relevant social institutions, such as cooperative and supervising departments, are also indispensable.^[2] These are all important sources of information for screening problems and developing an effective plan of action for quality improvement in hospitals.^[3] Measuring satisfaction has become the method of choice for obtaining views about medical services and has been adopted widely as an indicator of the medical quality of hospitals.^[4,5]

In this study, to recognize the inadequacies and improve the

service quality of tertiary hospitals, a third party (Minxin network work platform was founded on May 21, 2004, and was jointly created by The Liaoning Provincial Commission for Discipline Inspection, the Provincial Supervision Department, and the Provincial Government's Office of Rectification of Ethics) was invited to design surveys to evaluate the satisfaction levels at a hospital for six years (2014–2019). The hospital was a tertiary hospital with up to 4.71 million outpatients in 2019 (Table 1). This was the first comprehensive hospital satisfaction survey that included outpatients, inpatients, hospital staff and relevant social institutions. In response to the survey results, the hospital administrative office recognized inadequacies and improved the quality of their services. The hospital gradually improved over the 6 years of the study with the guidance of the survey results.

METHODS

Study Design and Setting

This was a 6-year satisfaction survey of 11,045 participants from

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Table 1: The Outpatients and Inpatients of the Hospital

	2014	2015	2016	2017	2018	2019
Number of outpatients	3,487,307	3,664,354	4,177,817	4,409,140	4,455,901	4,718,183
Number of inpatients	198,662	206,420	228,424	236,879	248,206	256,469

2014 to 2019. The participants included four groups, outpatients, inpatients, hospital staff and relevant social institutions. The outpatients (5609 participants) were randomly selected from hospital clinic patients and emergency patients. The inpatients (3647 participants) included patients undergoing treatment and patients who have been discharged from the hospital. The hospital staff (1647 participants) were from Shenjing Hospital, mainly from three departments (administrative staff, medical staff and support staff). Relevant social institutions (142 participants) were from health administrative offices, referral health facilities, social labor security supervision departments and medical insurance departments.

The survey items were designed by a third party after an extensive review of the pertinent literature^[6] and actual situation of hospital, such as the number of patients, The proportion of various types of employees and Relevant social institutions. Satisfaction score was from 0-point to 100-points, the higher the score, the higher the satisfaction. The average score of each Questionnaire was calculated for the last score. The Cronbach alpha coefficients of the surveys were over 0.7.

As hospital-supervising government departments were included in the relevant social institutions group and the characteristics of government agents are confidential, the characteristics of this group were excluded.

Inclusion and Exclusion Criteria

Patients with serious physical or mental diseases, such as terminal diseases or psychosis that could make comprehension and completion of the survey difficult, were also excluded.

Data collection

All the data were collected by a third party. All participants were approached by independent, trained, third-party research assistants. The assistants explained the purpose of the study onsite when the participants agreed to participate in the study. The survey was done face to face.

RESULTS

From 2014 to 2019, the hospital's outpatients increased from 3.48 million to 4.71 million and the inpatients increased from 190,000 to 256,000 (Table 1). The demographic characteristics of participants are summarized in Tables 2A, 2B, and 2C. The number of participants in each group for every year is shown.

(Table 2A)For the outpatient survey, the proportion of women was

nearly 2 times that of men. Most participants were less than 30 and 31–40 years old. Most of the respondents were local residents in Shenyang (above 80%). In the educational level, the proportion of College/Undergraduate or above is more than 50%. More than half people who participated in the survey had a monthly income greater than 2000 yuan. Regarding occupational composition, the highest proportion were employees of a business enterprise, followed by unemployed, students, retirees, and employees of government departments and institutions.

In the inpatient survey, the proportion of women was still higher than men. Most participants were 31–40 years old, followed by 41–50 years old, then 51–60 years old, and less than 30 years old. Compared with the outpatient survey, residents from other cities increased, but local residents still accounted a much high proportion. The majority of the participants had a monthly income between 2000 yuan and 4500 yuan.

Table 2C shows that most hospital employees participating in the survey were under 40 years old and the proportion of female participants was much larger than that of male participants. Most had a college/undergraduate level of education and were medical staff.

The items and results of the satisfaction surveys in each group are shown in Table 3A, 3B, 3C, and 3D. The satisfaction scores of outpatients and inpatients gradually increased. The outpatient and inpatient surveys included six parts: quality, price, image, expectation, satisfaction, and loyalty (Table 3A, Table 3B). The satisfaction of inpatients over the years was higher than that of outpatients.

The survey of hospital staff consisted of six parts: working environment, work arrangements, salary and welfare, career development, hospital management and trust in the hospital (Table 3C). The salary and welfare scores are significantly lower than other indicators. All the indicator's scores were low in 2016 and steadily increased after 2017. Of the indicators, work arrangements, trust in the hospital, hospital management and working environment are above the average score. Career development decreased significantly in 2015 (Figure 1).

The survey of relevant social institutions contained 14 parts, shown in Table 3D. All indicators have the same wave change trend of declining in 2015, 2016, 2018 and rising in 2017, 2019 (Table 3D).

DISCUSSION

This study examined feedback about hospital experience and

Table 2A: Characteristics of outpatients and emergency patients

Characteristic	2014		2015		2016		2017		2018		2019	
	<i>n</i> = 888		<i>n</i> = 920		<i>n</i> = 920		<i>n</i> = 923		<i>n</i> = 923		<i>n</i> = 1034	
Age(years)												
<30	281	32%	316	34%	269	29%	245	27%	284	31%	327	32%
31-40			306	33%	332	36%	338	37%	333	36%	344	33%
41-50	540	61%	146	16%	147	16%	119	13%	129	14%	133	13%
51-60			78	8%	79	9%	88	10%	82	9%	92	9%
>60	67	8%	74	8%	68	7%	67	7%	61	7%	85	8%
Refuse to answer	0	N/D	0	N/D	25	3%	66	7%	34	4%	53	5%
Sex												
Male	308	35%	367	40%	375	41%	308	33%	363	39%	385	37%
Female	580	65%	553	60%	545	59%	615	67%	561	61%	647	63%
Residence												
Shenyang	742	84%	836	91%	794	86%	760	82%	756	82%	881	85%
Liaoning	113	13%	65	7%	103	11%	105	11%	126	14%	109	11%
Out of Liaoning	33	4%	19	2%	23	3%	58	6%	42	5%	44	4%
Education level												
Junior high school and below	132	15%	187	20%	155	17%	172	19%	153	17%	174	17%
High school/technical school	194	22%	217	24%	191	21%	148	16%	194	21%	213	21%
College/Undergraduate	520	59%	459	50%	459	50%	430	47%	485	53%	489	47%
Postgraduate and above	42	5%	57	6%	54	6%	49	5%	46	5%	40	4%
Refuse to answer	0	N/D	0	N/D	61	7%	124	13%	46	5%	118	11%
Monthly income (yuan)												
<1000	43	5%	74	8%	45	5%	43	5%	42	5%	47	5%
1001-2000	123	14%	123	13%	76	8%	62	7%	66	7%	69	7%
2001-3000	245	28%	237	26%	215	23%	147	16%	150	16%	138	13%
3001-4500	216	24%	256	28%	186	20%	173	19%	202	22%	188	18%
>4500	261	29%	230	25%	236	26%	288	31%	354	38%	339	33%
Refuse to answer	0	N/D	0	N/D	162	18%	210	23%	110	12%	253	24%
Occupation												
Employees of government department and institution	137	15%	151	16%	138	15%	126	14%	145	16%	126	12%
Employees of business enterprise	251	28%	237	26%	205	22%	184	20%	204	22%	204	20%
Farmers	45	5%	67	7%	58	6%	76	8%	70	8%	59	6%
Unemployed, students, retirees	181	20%	226	25%	201	22%	191	21%	208	23%	247	24%
Others	274	31%	239	26%	247	27%	219	24%	240	26%	273	26%
Refuse to answer	0	N/D	0	N/D	71	8%	127	14%	57	6%	125	12%

N/D is no data.

evaluated the quality of medical administration via 6-year hospital satisfaction surveys. These surveys included patients, hospital staff and coherent units. This was the first time a satisfaction survey of a large hospital in China simultaneously included patients, hospital staff and relevant social institutions. The relevant

social institutions included insurance and hospital-supervising government departments. As these units are in contact with multiple types of hospitals, their responses were indicative of where the hospital in this study stood in relation to the medical society in China. Properly considering the opinions of the participants on

Table 2B: Characteristics of inpatients

Characteristic	2014		2015		2016		2017		2018		2019	
	n	%	n	%	n	%	n	%	n	%	n	%
Age(years)												
<30	80	16%	141	23%	140	22%	99	17%	95	16%	97	14%
31-40			160	26%	147	23%	202	34%	137	23%	149	22%
41-50	335	66%	114	19%	95	15%	100	17%	93	16%	104	15%
51-60			105	17%	72	11%	85	14%	92	15%	125	18%
>60	94	18%	95	15%	62	10%	66	11%	119	20%	161	24%
Refuse to answer	0	N/D	0	N/D	125	20%	48	8%	61	10%	49	7%
Sex												
Male	222	44%	267	43%	275	43%	254	42%	246	41%	305	45%
Female	277	54%	348	57%	366	57%	346	58%	351	59%	380	55%
Residence												
Shenyang	400	79%	445	72%	411	64%	334	56%	448	75%	452	66%
Liaoning	80	16%	149	24%	189	29%	236	39%	131	22%	201	29%
Out of Liaoning	29	6%	21	3%	41	6%	30	5%	18	3%	32	5%
Education level												
Junior high school and below	125	25%	243	40%	162	25%	129	22%	127	21%	207	30%
High school/technical school	173	34%	160	26%	75	12%	101	17%	101	17%	134	20%
College/Undergraduate	198	39%	189	31%	187	29%	176	29%	199	33%	223	33%
Postgraduate and above	13	3%	23	4%	21	3%	13	2%	12	2%	20	3%
Refuse to answer	0	N/D	0	N/D	196	31%	181	30%	158	26%	101	15%
Monthly income (yuan)												
<1000	39	8%	56	9%	36	6%	27	5%	22	4%	38	6%
1001-2000	70	14%	87	14%	42	7%	37	6%	30	5%	48	7%
2001-3000	179	35%	153	25%	68	11%	77	13%	50	8%	101	15%
3001-4500	134	26%	152	25%	68	11%	66	11%	93	16%	95	14%
>4500	87	17%	169	27%	89	14%	110	18%	140	23%	184	27%
Refuse to answer	0	N/D	0	N/D	338	53%	283	47%	262	44%	219	32%
Occupation												
Employees of government department and institution	66	13%	87	14%	75	12%	52	9%	48	8%	97	14%
Employees of business enterprise	102	20%	91	15%	84	13%	69	12%	96	16%	71	10%
Farmers	48	9%	63	10%	52	8%	56	9%	48	8%	94	14%
Unemployed, students, retirees	109	21%	179	29%	131	20%	95	16%	141	24%	171	25%
Others	184	36%	195	32%	106	17%	151	25%	99	17%	164	24%
Refuse to answer	0	N/D	0	N/D	193	30%	177	30%	165	28%	88	13%

N/D is no data.

Table 2C: Characteristics of hospital staffs

Characteristic	2014		2015		2016		2017		2018		2019	
	n = 244		n = 278		n = 245		n = 255		n = 247		n = 378	
Age(years)												
<30	67	27%	117	42%	95	39%	71	28%	69	28%	95	25%
31-40			110	40%	112	46%	128	50%	128	52%	199	53%
41-50	177	73%	34	12%	23	9%	32	13%	33	13%	54	14%
51-60			17	6%	15	6%	19	7%	17	7%	27	7%
>60	0	N/D	0	N/D	0	0%	5	2%	0	0%	3	1%
Sex												
Male	44	18%	49	18%	36	15%	45	18%	53	21%	90	24%
Female	200	82%	229	82%	209	85%	210	82%	194	79%	287	76%
Education level												
Junior high school and below	N/D	N/D	N/D	N/D	4	2%	7	3%	2	1%	10	3%
High school/technical school	N/D	N/D	N/D	N/D	161	66%	156	61%	169	68%	264	70%
College/Undergraduate	N/D	N/D	N/D	N/D	54	22%	55	22%	43	17%	66	17%
Postgraduate and above	N/D	N/D	N/D	N/D	26	11%	37	15%	33	13%	38	10%
Answered by												
Administrative staff	24	10%	22	8%	12	5%	23	9%	16	6%	8	2%
Medical staff	186	76%	190	68%	190	78%	182	71%	164	66%	279	74%
Supporting staff	34	14%	66	24%	43	18%	50	20%	67	27%	73	19%

N/D is the data missing due to the fine-tuning of the annual questionnaire.

Table 3A: Satisfaction of outpatients

Primary indicators	Secondary indicators	2014	2015	2016	2017	2018	2019
Quality		77.18	77.81	81.31	79.91	82.77	83.01
	Medical service	77.50	78.12	81.47	80.18	83.02	83.25
	Ancillary services	76.56	77.01	80.92	79.23	82.14	82.40
	Medical environment	77.32	79.48	82.02	80.63	82.21	83.11
Price		77.14	77.35	81.85	80.20	81.49	83.23
	Clear cost list	77.14	77.35	81.85	80.20	81.49	83.23
Image		77.48	77.70	78.80	76.57	79.74	80.49
	Public recognition	82.93	83.81	84.31	83.29	85.95	86.44
	Public welfare	75.25	78.58	78.21	76.08	79.70	79.85
	Pay attention to patients	72.45	75.80	84.31	83.22	77.90	78.84
Expectation		76.56	76.80	78.31	76.94	79.33	78.58
	Current acceptance	78.94	78.60	79.74	79.24	81.06	81.04
	Gap with the ideal	73.00	74.99	76.87	74.65	77.60	76.11
Satisfaction		76.49	76.36	78.14	79.83	82.04	81.68
	Overall impression	76.19	76.09	77.88	80.71	82.74	82.89
	Compare with peers	76.94	76.91	78.64	78.13	80.69	79.34
Loyalty		79.55	80.41	81.31	80.26	82.71	82.42
	Come again	79.44	80.28	80.90	80.00	82.32	83.11
	Confidence for the future	79.73	80.53	81.72	80.53	83.10	81.72
Overall satisfaction		77.38	77.67	80.24	79.18	81.67	81.96

Table 3B: Satisfaction of inpatients

Primary indicators	Secondary indicators	2014	2015	2016	2017	2018	2019
Quality		81.16	82.43	85.27	86.05	85.88	88.29
	Medical service	81.96	82.52	85.87	86.93	85.91	89.19
	Ancillary services	79.55	82.21	83.87	84.02	85.79	86.18
	Medical environment	81.56	84.49	86.45	88.04	86.73	90.10
Value		80.00	80.72	82.34	86.08	82.74	86.60
	Clear cost list	80.00	80.72	82.34	86.08	82.74	86.60
Hospital image		82.30	82.70	82.61	84.81	84.20	86.68
	Public recognition	85.11	85.20	85.98	88.75	86.25	89.49
	Public welfare	80.71	82.53	82.89	84.80	83.75	86.80
	Pay attention to patients	80.16	81.99	81.55	83.64	83.68	85.81
Expectation		80.75	80.52	80.20	82.99	82.94	84.23
	Current acceptance	82.51	81.47	82.06	83.19	83.14	85.34
	Gap with the ideal	78.11	79.57	78.34	82.80	82.74	83.12
Satisfaction		81.21	81.78	84.33	86.36	84.11	86.62
	Overall impression	80.15	81.68	85.48	87.30	84.09	86.90
	Compare with peers	82.79	81.99	81.99	84.50	84.15	86.04
Loyalty		82.07	82.93	83.07	84.17	84.11	86.16
	Choose this hospital again	82.32	82.55	83.52	84.62	84.41	86.16
	Confidence for the future	81.69	83.31	82.63	83.72	83.81	86.22
Overall satisfaction		83.56	85.43	84.42	86.92	84.42	81.96

Table 3C: Satisfaction of hospital staff

	2014	2015	2016	2017	2018	2019
Working environment	80.02	83.21	82.73	83.10	83.10	87.62
Working environment	86.39	86.33	84.81	85.73	85.99	90.63
Resource provision	84.18	82.67	83.95	83.61	83.81	88.68
Convenience of office equipment	82.79	84.39	82.40	83.29	82.02	87.67
Waste of office supplies	65.57	77.32	76.48	79.76	81.62	83.49
Cooperates	85.16	85.36	86.00	87.22	86.23	89.47
Work arrangements	84.54	85.62	84.32	84.33	84.99	86.71
Job suitability	86.89	87.87	85.84	87.37	87.85	90.58
Personal value	82.70	83.09	81.21	83.45	82.83	87.35
Challenging work	76.89	79.21	77.84	77.56	79.03	82.60
Responsibilities and rights	87.05	89.41	88.50	87.22	89.31	90.74
Intensity of work	80.41	81.73	82.42	78.12	78.06	73.76
Importance of work	88.93	90.84	89.05	90.00	90.36	91.64
Work-based training	86.07	87.20	85.34	86.61	87.45	89.31
Salary and welfare	70.84	71.30	71.77	74.77	74.77	78.48
Compatibility of salary with work	67.79	68.55	70.90	72.94	71.58	78.36
Incentive effect of salary system	71.15	71.19	71.59	75.84	73.68	79.37

Continued

Table 3C Continued

	2014	2015	2016	2017	2018	2019
Satisfaction with benefits	81.15	79.28	78.20	81.26	81.86	83.33
Salary and benefits level	64.67	66.19	66.38	69.02	68.74	72.86
Career development	84.30	79.47	79.43	81.27	81.27	84.86
Training satisfaction	82.43	81.52	82.11	85.36	82.38	86.20
Work development space	83.03	83.10	83.18	82.20	82.83	86.83
Be recognized	78.44	81.75	78.37	81.18	81.38	84.66
Job promotion system	73.93	71.51	71.47	75.51	73.85	80.53
Hospital management	86.50	84.19	83.27	84.50	84.50	87.93
Cultural construction	87.79	88.01	86.01	87.29	87.29	89.63
Activities	84.18	85.76	83.52	85.25	85.67	88.20
Activity effect	82.95	83.47	82.92	84.86	84.70	87.88
Rules and regulations	85.57	84.42	N/D	N/D	N/D	N/D
Clear process	84.51	84.03	83.35	83.78	83.81	87.67
Rewards and punishments	80.93	80.51	81.12	82.90	82.51	85.93
System execution	84.92	N/D	83.18	83.76	84.45	87.09
Management services	83.28	83.16	83.26	81.09	84.70	88.60
Trust in the hospital	81.83	84.64	83.16	85.36	85.36	88.33
Sense of belonging	91.07	89.31	88.10	89.10	89.64	91.96
Recognition of positions	78.85	77.39	74.72	81.25	79.68	83.76
The hospital fulfills its promise	86.64	84.06	83.20	85.02	85.10	88.04
Leaders care about employees	85.66	87.05	84.40	86.67	85.75	91.43
Employee pride	89.02	88.48	87.33	87.45	88.10	90.00
Dedication of employees	86.15	81.52	81.22	82.69	83.40	84.81
Overall employee satisfaction	81.83	80.11	79.60	81.09	81.00	84.48

N/D is no data.

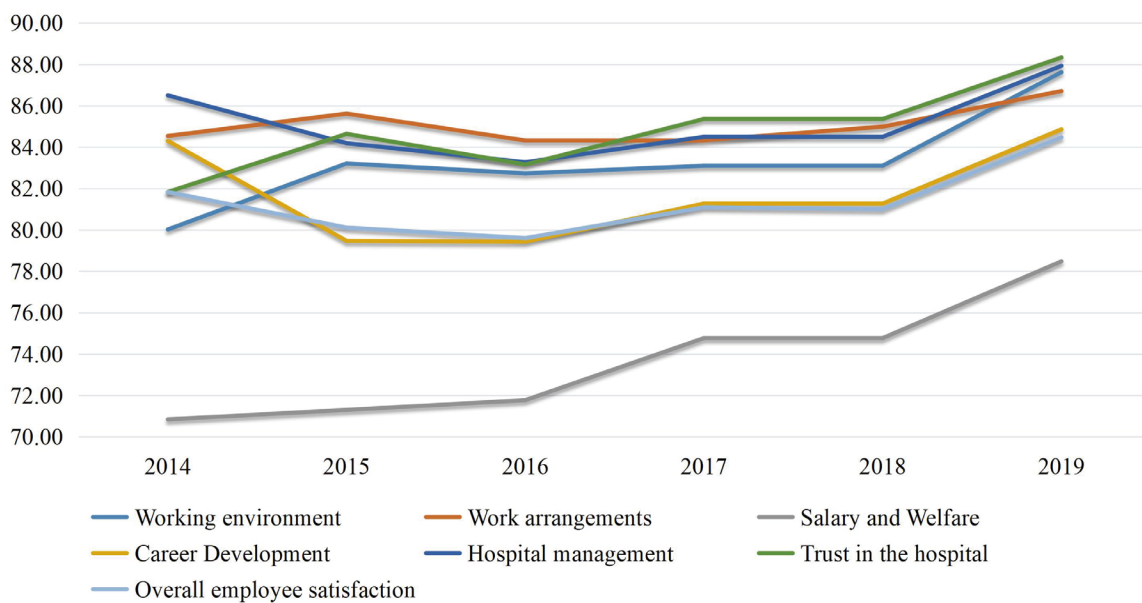


Figure 1. Satisfaction of hospital staffs.

Table 3D: Satisfaction of coherent unit staff

	2014	2015	2016	2017	2018	2019
Hospital management	99.33	94.67	92.00	100.00	94.00	96.00
Medical service	95.33	93.33	91.33	98.00	92.67	96.00
Technique level	96.00	92.67	90.67	98.67	93.33	96.67
Medical equipment	97.33	94.67	92.67	97.33	92.00	96.67
Service attitude	92.67	89.33	90.00	94.00	89.33	96.00
Medical ethics	93.33	87.33	90.00	94.00	91.33	97.33
Supervision acceptance	94.00	90.00	92.00	98.67	92.67	96.67
Cooperation	94.67	89.33	91.33	99.33	94.00	98.00
Regional development contribution	96.00	88.00	93.33	99.33	89.33	94.67
Rank in the same industry	96.00	92.67	89.33	96.67	88.67	92.67
Social responsibility	93.33	90.00	88.67	98.00	90.67	98.67
Integrity	93.33	92.00	90.00	98.00	92.67	98.00
Overall evaluation	94.00	92.67	92.00	98.67	93.33	97.33
Overall satisfaction	95.02	91.70	91.03	97.74	92.00	96.51

the various administrative aspects of the hospital would result in improvement. The hospital administrative office used the feedback from the surveys to re-organize the administrative work. It provided confirmation that satisfaction surveys improve the medical service and development of big hospitals.^[7]

All the survey results were discussed in hospital administrative office meetings and improvement plans were proposed by every staff member. Thereafter, solutions were decided on by the administrative office. For example, the complaints from patients about their hospital bills could be solved by improving communication with patients and by encouraging patients to attend a resident hospital instead of a big hospital for their first visit (which was called “two-way referral”), because resident hospitals are cheaper. The hospital staff increased communication with patients and each treatment plan was checked by senior doctors to prevent and reduce medical disputes. Patient satisfaction increased gradually after these improvements. The distribution of awards for hard-working staff was implemented and hospital benefits were improved in order to increase the satisfaction of hospital staff.^[8,9] To achieve long-term development, the hospital set up themes for targeted improvement every year: 2014 was the “Medical Professional Literacy Promotion Theme Year,” 2015 was the “Hospital Culture Promotion Theme Year,” 2016 was the “Employee Care Theme Year,” 2017 was the “Hospital Safety Theme Year,” 2018 was the “Hospital Improvement Service Theme Year,” and 2019 was the “High-quality Development Theme Year.”

As above, satisfaction surveys were used to evaluate hospital service and find inadequacies. Solutions for the inadequacies were found and hospital quality increased.

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Conflict of Interest

None declared.

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