

# A study of factors influencing expectation and satisfaction regarding hospital care among outpatients in a compact city

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## Abstract

*In Japan, after a period of rapid economic growth, the migration of the central city population to the suburbs has caused issues related to the decentralization of urban functions and the hollowing out of the central city area. The “Basic Policy and Action Plan for Revitalization” created a compact city that provides a range of functions necessary to facilitate living in the central urban area. A compact city needs to have commerce, government, welfare, hospitals, and transportation. Previous studies have reported that people move closer to hospitals when they relocate from the suburbs to the city center. The reasons for this tendency include “hospital convenience” and “emergency response.” However, a specific investigation has not been conducted. The purpose of this study is to extract the main factors influencing outpatients’ expectations of and satisfaction with hospital care in order to identify and effectively operate a hospital suitable for a compact city. The main factors of patients’ expectations and satisfaction were investigated using a questionnaire survey. A factor analysis revealed that outpatients living near clinics show expectation and satisfaction in “reception.”*

## Keywords

*compact city, hospital care, outpatients living near clinic, questionnaire survey, factor analysis*

## 1. Introduction

In Japan, after the period of rapid economic growth, the migration of the central-city population to the suburbs caused issues such as decentralized urban functions and the hollowing out of the central city. Moreover, in urban decentralized areas, everyday conveniences are more problematic. The “Basic Policy and Action Plan for Revitalization” created a compact city that provides a range of functions necessary for living in the central urban area [MLIT, 2019; Sekiya, 2012; Yamada, 2018; Yanagiuchi, 2010]. Many people live in central urban areas, including retired people and those raising children. A compact city needs to have commerce, government, welfare, hospital, and transportation services and infrastructure. Previous studies have reported that when a hospital is relocated from the suburbs to the city center, people tend to move closer to the hospital for reasons such as “hospital convenience” and “emergency response” [Konno, 2019]. However, a specific investigation has not yet been conducted to identify the factors influencing this tendency. The present study focused on the expectations and satisfaction of outpatients living near clinics with hospital care. The community-based integrated care system of the compact city defines a nearby patient as one within 30 min [MHLW, 2020]. The purpose of this study is to extract the main factors influencing outpatients’ expectations of and satisfaction with hospital care in order to effectively operate hospitals in a compact city. Moreover, the characteristics of outpatients’ expectation and satisfaction were investigated with regard to

a visit time of over 30 min and under 30 min. The influencing factors with a visit time of over 30 min and under 30 min were investigated and analyzed using a questionnaire survey. If the expectations and satisfaction of outpatients living near the hospital can be understood, hospitals will be able to operate more optimally in a compact city. This also explains why people also move to central-city areas as a result of regional revitalization.

In section 2, the outline of the questionnaire survey is described. In section 3, the analytical results of the survey are reflected. In sections 4 and 5, factors influencing expectations of and satisfaction with hospital care among outpatients are derived.

## 2. Outline of the questionnaire

### 2.1 Create item of the questionnaire

In this session, creation procedure of the questionnaire item is derived. The questionnaire items were discussed in a working group focusing on the general public and medical staff. First, brainstorming sessions were conducted on the question: “What are your expectations of and satisfaction with the hospital?” As a result of brainstorming, 81 question items were selected. Next, a preliminary questionnaire was created using these items, and a preliminary survey was conducted on randomly selected outpatients. In order to extract valid questionnaire items, the results of the preliminary survey were estimated using principal component analysis wherein the number of principal components was set to 5 using eigenvalue, cumulative variance, and scree plot. In addition, questionnaire items with a main component loading of 0.5 or more were extracted. As a result, 29 items were finally identified as valid questionnaire items.

## 2.2 Item of the questionnaire

In this session, the questionnaire item is derived. The questionnaire survey was conducted to collect comprehensive data on outpatients' expectations of and satisfaction with hospital care. The questionnaire comprised 41 items: 9 focused on basic information of the outpatients (items 1-9), and 30 items focused on their expectations of and satisfaction with hospital care (items 10-39).

### 2.2.1 Question items on the basic information of outpatients

In this session, questionnaire items about the outpatients' basic information were shown to them. The main questions are listed below. Other questions are an appendix.

Please provide us with basic information.

- Item 1: Please provide us with your gender
- Item 2: Please provide us with your age
- Item 3: Please provide us with your visit time

### 2.2.2 Question items on outpatients' expectation and satisfaction with hospital care

In this session, questionnaire items about the expectations of and satisfaction with hospital care were shown to the outpatients. They were asked the following question:

What are your levels of expectation and satisfaction regarding the following 29 items? Please select one of the following: "Extremely expected or satisfied," "Slightly expected or satisfied," "Slightly unexpected or dissatisfied," or "Extremely unexpected or dissatisfied."

- Item 10: Clinic is easy to visit from home or work
- Item 11: Clinic is near a railway station and bus stop
- Item 12: Parking lot is easy to use
- Item 13: Reception area is easy to locate
- Item 14: Hospital signs are easy to understand
- Item 15: Information is provided inside the hospital
- Item 16: Waiting room is appropriate
- Item 17: Hospital restrooms are clean
- Item 18: Room temperature in the hospital is appropriate
- Item 19: Flow from reception to accounting is easy to understand
- Item 20: Waiting time from reception to examination
- Item 21: Waiting time from consultation to examination
- Item 22: Administration of medical treatments at night
- Item 23: Administration of medical treatments during holidays
- Item 24: Appearance of medical clerk is good
- Item 25: Nurses present a professional appearance
- Item 26: Medical doctors present a professional appearance
- Item 27: Medical clerks communicate well
- Item 28: Nurses communicate well
- Item 29: Staff members can communicate with individuals who speak foreign languages
- Item 30: Medical doctors can communicate with individuals who speak foreign languages

- Item 31: Staff members possess good telephone communication skills
- Item 32: Nurses' explanations are easy to understand
- Item 33: Medical doctors' explanations are easy to understand
- Item 34: Medical treatment is provided by experts
- Item 35: Medical doctors participate in social media
- Item 36: Participation in a patient association
- Item 37: Participation in a study group
- Item 38: If you do not arrive on the appointment day, you will be contacted
- The comprehensive evaluation of hospitals is as follows:
- Item 39: How would you rate your current level of satisfaction (satisfaction only)?

## 2.3 Survey methods

In this session, survey methods are described. The questionnaire survey was conducted from June 1 to 30, 2018 for all outpatients at a hospital in Tokyo, Japan, after receiving and receiving approval from the hospital. Outpatients who did not provide their consent to participate in the questionnaire survey were excluded. The characteristics of the hospital at which this study was carried out are as follows:

- Location: Tokyo (central city in Tama area), Japan
- Medical staff composition: medical doctors (5), nurses (10), and medical clerks (5)
- Patients examined: outpatient only
- Specialized field: metabolic, such as diabetes
- Number of outpatients: about 3,000 per month
- Normal days of operation: Monday to Saturday
- Normal hours of operation: 9 a.m. to 6 p.m.
- Holiday medical treatment: once a month
- Night medical treatment: twice a week

## 3. Results of the questionnaire survey

In this session, results of the questionnaire survey are described. A total of 199 questionnaires were collected after completion (valid response rate: 19.9 %). Figure 1 shows the gender composition of the respondents (item 1). The respondents included 92 (46.23 %) males and 107 (53.77 %) females. Figure 2 shows the age composition of the respondents (item 2).

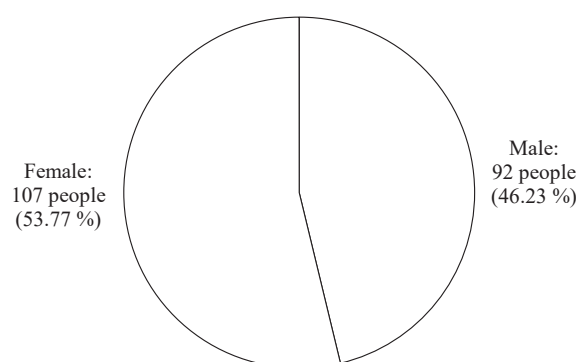


Figure 1: Gender distribution of participants

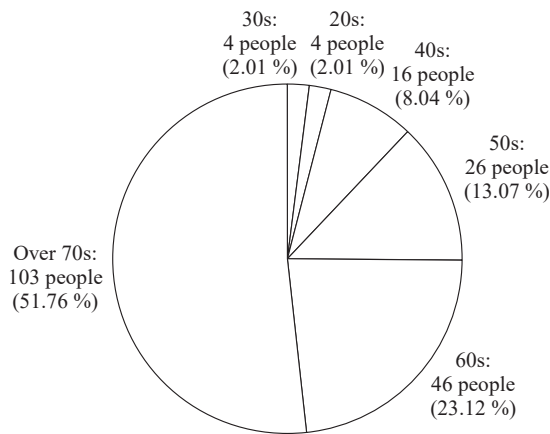


Figure 2: Age distribution of participants

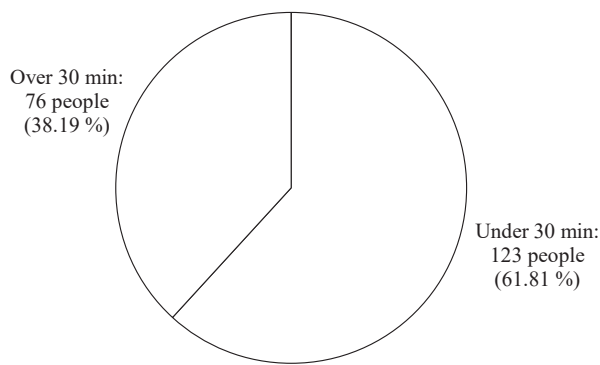


Figure 3: Visit time of participants

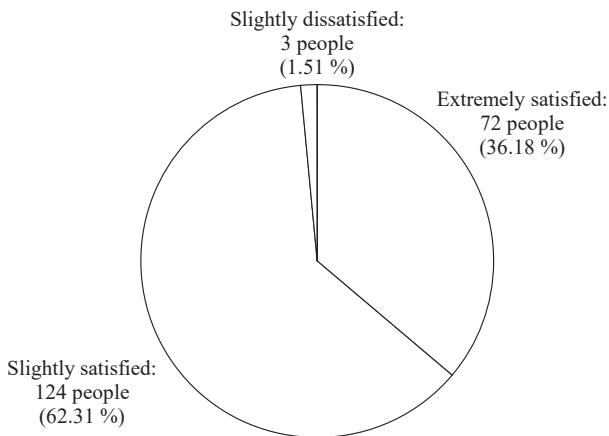


Figure 4: Patient satisfaction

Table 1: Relationship between gender and visit time among outpatients

	Male	Female
Under 30 min	57 (46.34 %)	65 (53.66 %)
Over 30 min	35 (46.05 %)	41 (53.95 %)

They mainly comprised individuals in their 70s and older. Figure 3 shows the average duration of the respondents' visits (item 3), herewith referred to as "visit time." The respondents were divided into two groups based on their visit time: 123 (61.81 %) respondents comprised the under 30 min group and 76 (38.19 %) comprised the over 30 min group. Figure 4 shows the aggregate results of "current satisfaction" of the respondents (item 39); 124 (62.31 %) respondents were "slightly satisfied."

In order to compare outpatients living nearby and those living far away from the hospital, they were classified by the visit time of under or over 30 min with compact city. The differences in visit time were examined based on the participants' basic characteristics. The relationship between gender and visit time is shown in Table 1; the number of respondents of each gender did not differ by visit time. The relationship between age and visit time is shown in Table 2; there was no difference in the number of respondents of each age group by visit time. The relationship between satisfaction and visit time is shown in Table 3; most respondents regardless of visit time indicated that they were "Slightly satisfied."

**4. Results of the relationship between expectation and satisfaction in each question items**

In this session, results of the relationship between expectation and satisfaction in each question items are described. The relationship between expectations of and satisfaction with hospital care as determined by each question item of all respondents is shown in Figure 5.

Items 11-15, 18, 20-31, 33 and 35-38 showed significantly higher expectations than satisfaction, while items 20 and 21 showed significantly higher satisfaction than expectations. There was a significant difference ( $\alpha = 0.01$ ) between expectations and satisfaction in those items. Next, the relationship between expectations and satisfaction for each question item

Table 2: Relationship between age group and visit time among outpatients

	20s	30s	40s	50s	60s	Over 70s
Under 30 min	1 (0.81 %)	3 (2.44 %)	12 (9.76 %)	18 (14.63 %)	29 (23.58 %)	59 (48.78 %)
Over 30 min	3 (3.95 %)	1 (1.32 %)	4 (5.26 %)	8 (10.53 %)	17 (22.37 %)	43 (56.58 %)

Table 3: Relationship between gender and satisfaction among outpatients

	Extremely satisfied	Slightly satisfied	Slightly dissatisfied	Extremely dissatisfied
Under 30 min	39 (31.71 %)	81 (66.67 %)	2 (1.63 %)	0 (0.00 %)
Over 30 min	33 (43.42 %)	42 (55.26 %)	1 (1.32 %)	0 (0.00 %)

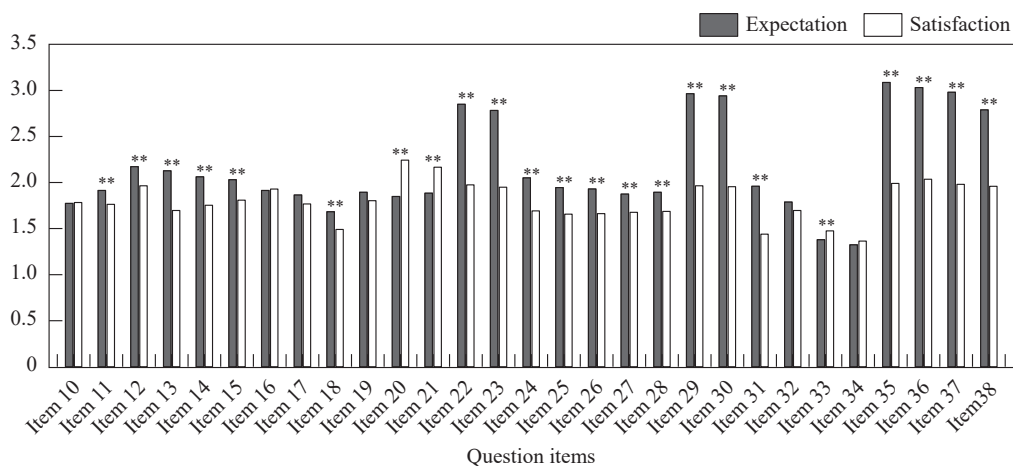


Figure 5: Relationship between expectations and satisfaction for each question item (all respondents)

Notes: \*\* Significant difference (1 %) between expectation and satisfaction.

Table 4: Relationship between expectation and satisfaction in each question item

Item no.	All respondents	Visit time group of under 30 min	Visit time group of over 30 min
	Significant difference	Significant difference	Significant difference
Item 10			
Item 11	** (E)		
Item 12	** (E)		
Item 13	** (E)	** (E)	** (E)
Item 14	** (E)	** (E)	** (E)
Item 15	** (E)	** (E)	
Item 16			
Item 17			
Item 18	** (E)	** (E)	
Item 19			
Item 20	** (S)	** (S)	
Item 21	** (S)	** (S)	
Item 22	** (E)	** (E)	** (E)
Item 23	** (E)	** (E)	** (E)
Item 24	** (E)	** (E)	** (E)
Item 25	** (E)	** (E)	** (E)
Item 26	** (E)	** (E)	
Item 27	** (E)	** (E)	
Item 28	** (E)	** (E)	
Item 29	** (E)	** (E)	** (E)
Item 30	** (E)	** (E)	** (E)
Item 31	** (E)	** (E)	** (E)
Item 32			
Item 33	** (S)		
Item 34			
Item 35	** (E)	** (E)	** (E)
Item 36	** (E)	** (E)	** (E)
Item 37	** (E)	** (E)	** (E)
Item 38	** (E)	** (E)	** (E)

Notes: \*\* Significant difference (1 %) between expectation and satisfaction; E: Expectations are higher; S: satisfaction are higher.

of the two visit-time groups of under and over 30 min is shown in Table 4. Among respondents of the under 30 min group, items 15, 18, 20, 21, and 26-28 showed significantly higher expectations than satisfaction, while items 20 and 21 showed significantly higher satisfaction than expectations. There was a significant difference ( $\alpha = 0.01$ ) between expectation and satisfaction in those items. These results revealed that outpatients with less than 30 min visit time at the hospital had high expectations of the hospital facility and reception of medical staff. In addition, it was shown that satisfaction was high with regard to the waiting time.

**5. Derivation of factors influencing expectation and satisfaction with hospital care among outpatients**

In the previous section, the characteristic tendencies of each questionnaire item were described. The items related to hospital facility, reception, and waiting time were characteristic tendencies in the outpatients whose visit time was less than 30 min. In this section, the main factors influencing expectations of and satisfaction with hospital care are examined using the results of the questionnaire survey.

**5.1 Analysis methods**

In this session, analysis methods are described. The main factors influencing expectations and satisfaction were derived by applying a factor analysis to the results of the questionnaire survey (items 10-38). As shown in Table 5, a value of 4 was

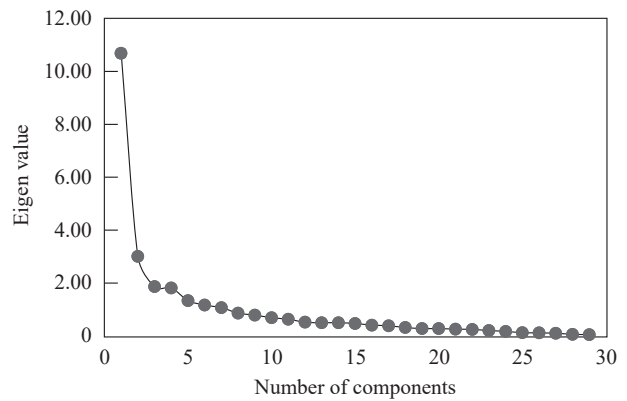
Table 5: Data converted into numerical data

Results		Numerical data
Expectation	Satisfaction	
Extremely expected	Extremely satisfied	4
Slightly expected	Slightly satisfied	3
Slightly unexpected	Slightly dissatisfied	2
Extremely unexpected	Extremely dissatisfied	1

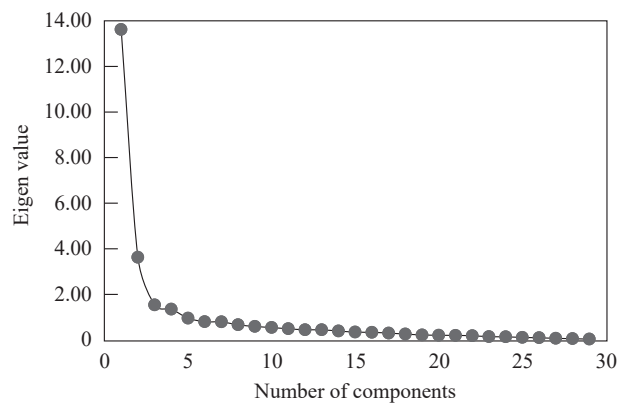
assigned to the answer “Extremely expected” and “Extremely satisfied.” A factor analysis was then performed using these assigned numerical data using JMP13.0.

**5.2 Analysis results**

In this session, analysis results are described. The obtained results and scree plot based on the analysis are shown in Table



(a) Expectation



(b) Satisfaction

Figure 6: Scree plot obtained by a factor analysis

Table 6: Results of a factor analysis

Components	Expectation			Satisfaction		
	Eigenvalue	Variance (%)	Cumulative Variance (%)	Eigenvalue	Variance (%)	Cumulative Variance (%)
1	10.684	36.840	36.840	13.621	46.970	46.970
2	3.010	10.378	47.218	3.625	12.499	59.469
3	1.871	6.450	53.668	1.541	5.313	64.782
4	1.816	6.262	59.929	1.351	4.657	69.440
5	1.341	4.624	64.554	0.958	3.302	72.742
6	1.171	4.037	68.591	0.802	2.765	75.507
7	1.071	3.694	72.285	0.793	2.733	78.240
8	0.865	2.982	75.267	0.666	2.297	80.537
9	0.789	2.722	77.989	0.593	2.046	82.583
10	0.692	2.387	80.376	0.547	1.886	84.469
.	.	.	.	.	.	.
29	0.055	0.190	100.000	0.038	0.132	100.000

6 and Figure 6, respectively. They reveal that five factors were estimated from this analysis for expectations as well as satisfaction.

**5.3 Characteristics of the derived factors in all outpatients**

In this session, characteristics of the derived factors in all outpatients are described. We examined the characteristics of the factors derived from the factor analysis. First, five factors derived from expectations were named.

The results of the factor scores' coefficient matrix for expectations are shown in Table 7. Factor 1 affected items 27, 25, 28, 26, 24, 31 and 32. These question items included keywords such as "communicate well," and "appearance of medical doctors and nurses." Therefore, factor 1 was named "reception" in this study. Factor 2 affected items 36, 29, 30, 37, 35, 15, and 38. These question items included keywords such as "conversation

in foreign language" and "study group." Therefore, factor 2 was named "additional services."

Factor 3 affected items 20, 21, 19, 16, 18, 10, 12, and 11. These question items included keywords such as "room temperature" and "easy reception and accounting." Therefore, factor 3 was named "hospital facility" in this study. Factor 4 affected items 34, 33, 14, 13, and 17. These question items included keywords such as "professional treatment" and "easy to understand explanation." Therefore, factor 4 was named "treatment expertise." The last factor, factor 5 affected items 23 and 22. These question items included keywords such as "holiday outpatient" and "night outpatient." Therefore, factor 5 was named "convenience." Next, the five factors derived from satisfaction were named. The results of the factor scores' coefficient matrix for satisfaction are shown in Table 8. The question items are the same as in Table 7 (expectation). As shown

Table 7: Results of factor scores coefficient matrix of expectation

Items questioned		Factors				
		1	2	3	4	5
Item 27:	Medical clerks communicate well	0.872	0.082	0.165	0.199	0.127
Item 25:	Nurses present a professional appearance	0.872	0.185	0.199	0.143	0.062
Item 28:	Nurses communicate well	0.863	0.130	0.116	0.194	0.156
Item 26:	Medical doctors present a professional appearance	0.839	0.205	0.183	0.182	0.048
Item 24:	Appearance of medical clerk is good	0.647	0.241	0.266	0.196	0.045
Item 31:	Staff members possess good telephone communication skills	0.558	0.197	0.243	0.232	0.299
Item 32:	Nurses' explanations are easy to understand	0.529	0.052	0.159	0.372	0.254
Item 36:	Participation in a patient association	0.115	0.801	0.088	0.156	0.106
Item 29:	Staff members are able to communicate with individuals who speak foreign languages	0.134	0.784	0.136	-0.050	0.162
Item 30:	Medical doctors are able to communicate with individuals who speak foreign languages	0.156	0.777	0.125	-0.122	0.172
Item 37:	Participation in a study group	0.157	0.769	0.057	0.162	0.117
Item 35:	Medical doctors participate in social media	0.079	0.686	-0.019	0.095	0.139
Item 15:	Information is provided inside the hospital	0.313	0.423	0.364	0.376	-0.113
Item 38:	If you do not come to the appointment day, you will be contacted	0.126	0.423	0.159	0.078	0.359
Item 20:	Waiting time from reception to examination	0.112	-0.016	0.753	0.011	0.186
Item 21:	Waiting time from consultation to examination	0.143	-0.016	0.750	-0.013	0.137
Item 19:	Flow from reception to accounting is easy to understand	0.361	0.297	0.555	0.335	-0.137
Item 16:	Waiting room is appropriate	0.248	0.165	0.540	0.275	-0.001
Item 18:	Room temperature in the hospital is appropriate	0.343	0.116	0.418	0.264	0.025
Item 10:	Clinic is easy to visit from home or work	0.329	0.062	0.372	0.108	0.200
Item 12:	Parking lot is easy to use	0.041	0.169	0.293	0.118	0.147
Item 11:	Clinic is near a railway station and bus stop	0.226	0.202	0.275	0.189	0.250
Item 34:	Medical treatment is provided by experts	0.248	0.015	0.092	0.709	0.141
Item 33:	Medical doctors' explanations are easy to understand	0.246	-0.057	0.081	0.686	0.177
Item 14:	Hospital signs are easy to understand	0.311	0.424	0.316	0.555	-0.174
Item 13:	Reception area is easy to locate	0.385	0.405	0.329	0.468	-0.188
Item 17:	Hospital restrooms are clean	0.273	0.270	0.412	0.454	0.043
Item 23:	Administration of medical treatments during holidays	0.189	0.258	0.175	0.054	0.792
Item 22:	Administration of medical treatments at night	0.155	0.333	0.155	0.096	0.759

in Table 8, factor 1 affected items 13, 14, 19, 15, 17, 24, 16, 18, 21, 10, and 20. These question items included keywords such as “easy reception and accounting,” and “restroom cleanliness.” Therefore, factor 1 was named “hospital facility” in this study. Factor 2 affected items 30, 29, 37, 35, 36, 38, and 12. These question items included keywords such as “conversation in foreign language” and “study group.” Therefore, factor 2 was named “additional services.” Factor 3 affected items 28, 27, 26, 25, and 32. These question items included keywords such as “communicate well,” and “appearance of medical doctors and nurses.” Therefore, factor 3 was named “reception.” Factor 4 affected items 33, 31, and 34. These question items included keywords such as “easy to understand explanation” and “professional treatment.” Therefore, factor 4 was named “treatment expertise.” The last factor, factor 5 affected items 22, 23, and 11. These question items included keywords such as “holiday outpatient” and “night outpatient.” Therefore, factor 5 was

Table 8: Results of factor scores coefficient matrix of satisfaction

Items questioned	Factors				
	1	2	3	4	5
Item 13:	0.786	0.110	0.293	0.001	0.124
Item 14:	0.777	0.257	0.299	0.073	0.090
Item 19:	0.769	0.127	0.286	0.185	0.000
Item 15:	0.765	0.194	0.268	0.110	0.075
Item 17:	0.753	0.100	0.239	0.184	0.100
Item 24:	0.713	0.191	0.348	0.109	0.148
Item 16:	0.627	0.146	0.186	0.299	0.036
Item 18:	0.585	0.092	0.190	0.366	0.072
Item 21:	0.581	0.167	0.113	0.402	-0.062
Item 10:	0.529	0.114	0.189	0.124	0.141
Item 20:	0.525	0.206	0.007	0.431	0.000
Item 30:	0.124	0.857	0.130	0.103	0.103
Item 29:	0.206	0.851	0.201	0.053	0.068
Item 37:	0.100	0.817	0.116	0.137	0.149
Item 35:	0.122	0.752	0.072	0.161	0.210
Item 36:	0.249	0.711	0.219	0.218	0.070
Item 38:	0.100	0.570	0.187	0.099	0.234
Item 12:	0.343	0.472	-0.155	0.080	0.196
Item 28:	0.458	0.173	0.778	0.211	0.086
Item 27:	0.455	0.193	0.750	0.152	0.116
Item 26:	0.490	0.205	0.725	0.215	0.128
Item 25:	0.476	0.202	0.711	0.248	0.104
Item 32:	0.413	0.215	0.667	0.362	0.130
Item 33:	0.275	0.213	0.385	0.688	0.090
Item 31:	0.317	0.208	0.419	0.593	0.062
Item 34:	0.263	0.396	0.249	0.568	0.106
Item 22:	0.098	0.509	0.116	0.079	0.798
Item 23:	0.102	0.512	0.128	0.100	0.787
Item 11:	0.382	0.187	0.185	-0.010	0.391

Table 9: Named component

	Named	
	Expectation	Satisfaction
Factor 1	Reception	Hospital facility
Factor 2	Additional services	Additional services
Factor 3	Hospital facility	Reception
Factor 4	Treatment expertise	Treatment expertise
Factor 5	Convenience	Convenience

named “convenience.” The named factors are summarized in Table 9. In the next section, the characteristics of the derived factors at each visit time are described.

**5.4 Characteristics of the derived factors at each visit time**

In this session, characteristics of the derived factors at each visit time are derived. As described in the previous session, the number of factors was estimated and the factors were named. Seven factors derived from expectations in the visit-time group of under 30 min were named. Factors 1, 2, 3, 4, 5, 6, and 7 were named “reception,” “additional service,” “hospital facility,” “convenience,” “waiting time,” “treatment expertise,” and “amenity,” respectively. Next, four factors derived from satisfaction in the visit time group of under 30 min were named. Factors 1, 2, 3, and 4 were named “reception and hospital facility,” “additional service,” “convenience,” and “treatment expertise,” respectively. Then, four factors derived from expectations in the visit-time group of over 30 min were named. Factors 1, 2, 3, and 4 were named “reception,” “hospital facility,” “additional service,” and “convenience,” respectively. Finally, four factors derived from satisfaction in the visit-time group of over 30 min were named. Factors 1, 2, 3, and 4 were named “additional service,” “hospital facility,” “reception,” and “hospital support,” respectively. The named factors are summarized in Table 10.

**5.5 Results of the relationship between each factor and visit time**

In this session, results of the relationship between each factor and visit time. The factor scores and background of outpatients such as the visit-time group into which they were classified corresponding to their survey responses are shown in Table 11. The relationship between each factor with the same name in terms of expectations and satisfaction and visit time was examined using the factor score of the respondents. However, it was not possible to reveal the characteristics of each of these factors. Therefore, it was examined by classifying them according to the attributes of the respondents such as gender and age. The characteristic contents are shown in Figures 7, 8, and 9. The respondents are divided into those 60 years and under and 60 years and over. As shown in Figure 7 and 8, the characteristic tendencies of respondents over the age of 60 are not revealed, although they were revealed for respondents under the age of 60. This study particularly focuses on the results of respond-

Table 10: Named component in each visit time

	Named in a visit time group of under 30 min		Named in a visit time group of over 30 min	
	Expectation	Satisfaction	Expectation	Satisfaction
Factor 1	Reception	Reception and Hospital facility	Reception	Additional services
Factor 2	Additional services	Additional services	Hospital facility	Hospital facility
Factor 3	Hospital facility	Convenience	Additional services	Reception
Factor 4	Convenience	Treatment expertise	Convenience	Hospital service
Factor 5	Waiting time	-	-	-
Factor 6	Treatment expertise	-	-	-
Factor 7	Amenity	-	-	-

Table 11: An excerpt of the relationship factor scores of each response and visit time

Answer no.	Factor 1	Factor 5	Visit time
1	0.1938	0.1820	under 30 min
2	0.0040	0.5274	over 30 min
3	-0.0528	0.5806	under 30 min
4	0.3812	-1.1147	over 30 min
5	0.1263	1.3783	under 30 min
199	-1.4652	0.7232	under 30 min

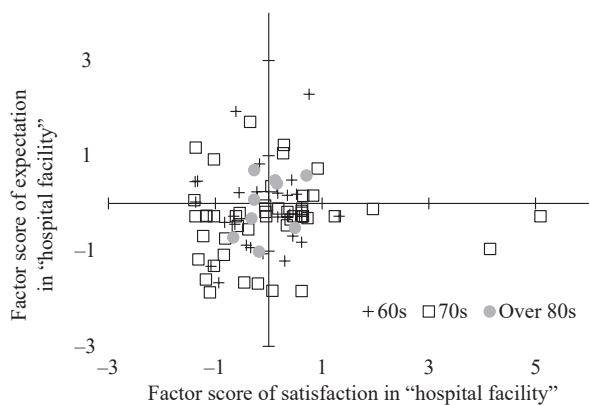
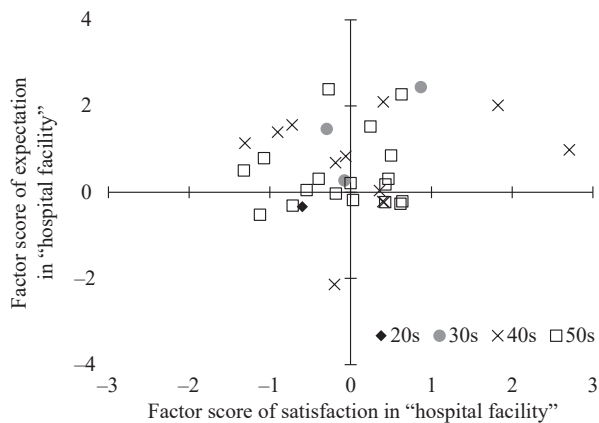


Figure 7: Relationship between expectations and satisfaction in respondents (hospital facility)

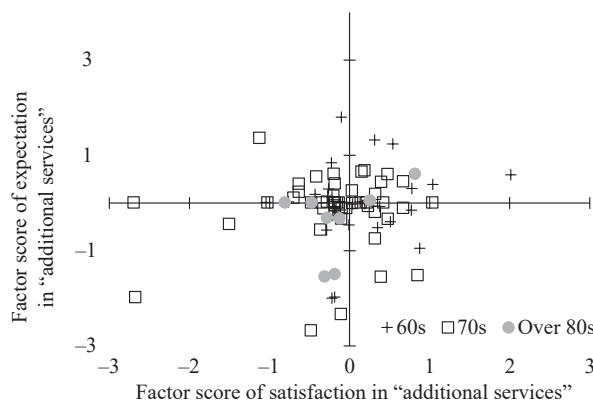
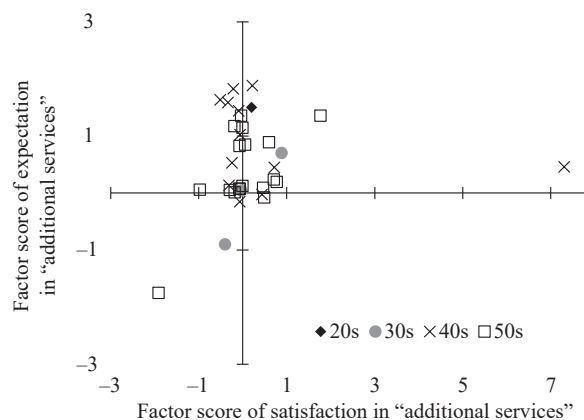


Figure 8: Relationship between expectations and satisfaction in respondents (additional service)

ents in their 40s and 50s, who make up a large sample size. As shown in Figure 7, 20 out of 30 respondents in their 40s and 50s in the visit-time group of under 30 min showed positive factor scores for expectations of “hospital facility.” As shown in Figure 8, 25 out of 30 respondents in their 40s and 50s in the visit-time group of under 30 min showed positive factor scores for expectations of “additional services.” On the other hand, as shown in Figure 9, 10 out of 12 respondents in their 40s in the visit-time group of under 30 min showed positive factor scores for satisfaction with “treatment expertise.”



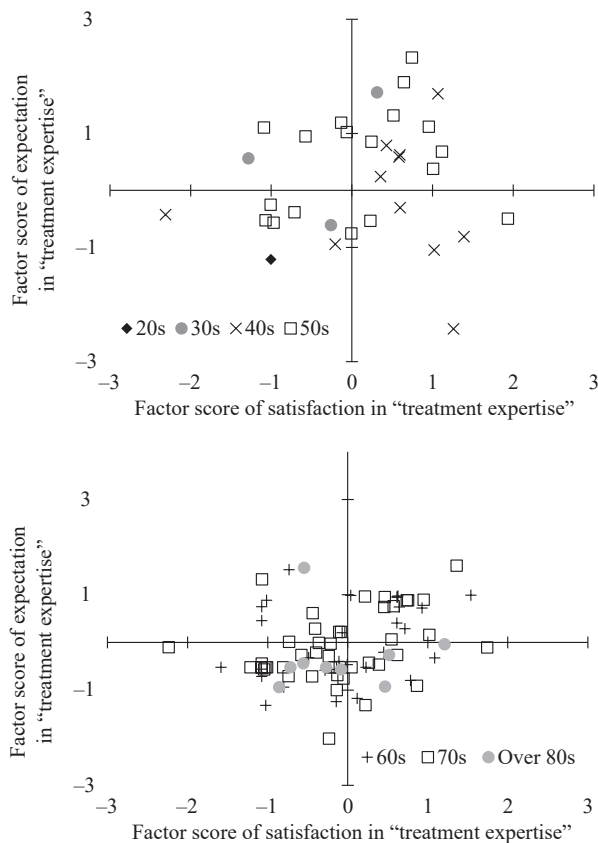


Figure 9: Relationship between expectations and satisfaction in respondents (treatment expertise)

## 6. Conclusion

In this study, main factors for outpatients' expectations of and satisfaction with hospital care were identified in order to determine how to effectively operate hospitals in a compact city. Moreover, the characteristics of expectations and satisfaction were investigated in outpatients classified into visit-time groups of over and under 30 min.

A total of 198 questionnaires were collected after completion (valid response rate: 19.9 %). For respondents in the under 30 min visit-time group, item 6, 9, 17, 18, and 19 showed significantly higher expectations than satisfaction. These items were related to the treatment of medical staff and the cleanliness of facilities. Therefore, it is considered that outpatients have high expectations of regular visits to nearby clinics.

Additionally, Item 11 and 12 showed significantly higher satisfaction than expectations. These items were related to waiting time. In general, waiting times at hospitals are unsatisfactory. However, outpatients in this study were satisfied with the waiting time because they were visiting a clinic nearby.

Results of the factor analysis indicated that all the respondents identified five main factors of expectations: reception (factor 1), additional services (factor 2), hospital facility (factor 3), treatment expertise (factor 4), and convenience (factor 5). They also identified five main factors of satisfaction: hospital facility (factor 1), additional services (factor 2), reception (fac-

tor 3), treatment expertise (factor 4), and convenience (factor 5). These results reveal that high expectations of the treatment of medical staff emphasize a desire for accurate medical treatment. On the other hand, the high level of satisfaction with the facility seems to be influenced by the ability to wait in a comfortable environment despite outpatients' poor physical condition. Moreover, among outpatients in the visit-time group of under 30 min, "reception" was the top factor in terms of their expectations and "reception and hospital facility" was the top factor in terms of their satisfaction while, among outpatients in the visit-time group of over 30 min, "reception" was the top factor in terms of their expectations and "additional services" was the top factor in terms of their satisfaction. Additional services include medical treatments at night and during holidays. Patients who lived some distance away from the hospital were likely to be satisfied with such services.

Respondents in their 40s and 50s in the visit-time group of under 30 min showed positive factor scores for expectations of "hospital facility" and "additional services." It is considered that these are the services required for regular consultation. Additionally, they showed positive factor scores for satisfaction with "treatment expertise." The high level of expectations of "treatment expertise" is reflected in the ability of outpatients to receive specialized medical care through appropriate communication with medical staff.

The summary of this study is as follows:

- Many respondents in the visit-time group of under 30 min showed expectations and satisfaction of "reception."
- Respondents in their 40s and 50s in the visit-time group of under 30 min showed expectations of "hospital facility" and "additional services."

These results could be applied to hospital management in a compact city. In addition, people tend to move to the central city area as a result of regional revitalization.

In the future, we will investigate the specialty hospitals that are needed for regional revitalization.

## Acknowledgment

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## Appendix

Other questionnaire items of this survey are shown below.

- Item 4: Please provide us with your job
- Item 5: Please provide us you're your consultation interval
- Item 6: Please provide us with your consultation period
- Item 7: Please provide us with your household annual income
- Item 8: Do you make a reservation today?
- Item 9: What is the purpose of your consultation

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