

**Original Research****PATIENT SATISFACTION, PERCEPTION-EXPECTATION GAP, AND CUSTOMER SATISFACTION INDEX IN ANNUAL SURVEY 2021 AT DR. SOETOMO GENERAL ACADEMIC HOSPITAL, INDONESIA**

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**ABSTRACT**

*Service quality is essential in health institutions that can affect patient satisfaction and loyalty. The growth in the number of patients at Dr. Soetomo General Academic Hospital, Surabaya, Indonesia, triggered the diversification of services that require periodic quality control. This study aimed to investigate the performance of 31 departments/units in the hospital, the level of customer satisfaction with services provided, and factors that could influence satisfaction. A survey about service performance, perception, and expectation of services was carried out in 31 departments/units using questionnaires from August to October 2021. Convenient respondents consisted of 2121 patients and their families aged >15. Questionnaire items assessed performance, perceptions, and expectations of health services using the SERVQUAL method. Statistical Package for the Social Sciences (SPSS) software was used to perform an analysis of the results of the measurement and the difference in responses between demographic groups of respondents ( $p < 0.05$  was significant). The mean performance score was 92.86, and the gap between their perception and expectation averaged -0.23. Customers' expectations of the provider's competence were met, and its performance was perceived to be the best. Meanwhile, handling complaints was perceived as having the lowest performance, while customers' satisfaction over it had not been met. The results showed that the hospital could still not fully meet some of the customer expectations, with immediate improvements needed in handling complaints.*

**Keywords:** Health services; health system; healthcare quality; hospital management

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**Hi j ni j tu**

3. Customers expectations at Dr. Soetomo General Academic Hospital has a higher quality of service.
2. The handling of complaints has a low performance on the quality of services at Dr. Soetomo General Academic Hospital.
3. Improving service quality requires improvements in efficient complaint handling.

## INTRODUCTION

The COVID-19 pandemic has further emphasized the importance of comprehensive health care management. At a time when most people's attention is focused on the quality of health services and health service organizations (i.e., hospitals), are increasingly required to provide excellent service quality (Lim et al. 2018). Creating service quality is a continuous effort of a service organization, including hospitals. This is triggered by the continuous change in public expectations, which is also accompanied by an increasingly competitive environment (Rivers & Glover 2008). Therefore, hospitals need to carry out a continuous cycle of planning, implementation, evaluation, and action to achieve complete service quality. Hospitals that fail to understand the importance of customer satisfaction can slowly experience setbacks (Aghamolaei et al. 2014).

In measuring service quality, two feasible approaches can be applied: direct and an indirect approach. The direct approach is a concept related to the customer's perception of the actual performance of the services. This direct approach supports the fact that satisfaction is the psychological state of customers after receiving service, which they express during an assessment. Meanwhile, indirect approach assumes that the service quality perceived by customers is influenced by their perception before receiving service and what they perceive from service performance (Endeshaw 2021). Several indicators can be used to measure customer satisfaction with the services provided by the hospital, including traditional rating score and service quality method (SERVQUAL) (Endeshaw 2021).

Dr. Soetomo General Academic Hospital is located in Surabaya, Indonesia. It serves as the main referral and academic hospital in East Java, a province with a population of 39.74 million. In 2021, 556,226 patients visited the hospital at least once, and 10,701 patients visited the hospital >11 times in that year. With the large number of patients and development of health services to become patient-centered, efforts to identify aspects of service that still need to be improved are very much needed. This study aimed to investigate the performance of 31 departments/units in Dr. Soetomo General Academic Hospital, Surabaya, Indonesia, as well as the level of customer satisfaction towards health and administrative services provided by the hospital.

## MATERIALS AND METHODS

A survey about service performance, perception of services, and expectation of services was carried out in 31 departments/units at Dr. Soetomo General

Academic Hospital using questionnaires from August to October 2021. The subjects were patients and their families aged >15 who were using health and administration services at the hospital in 2021. Ethical approval for this study was obtained from the Health Research Ethics Committee of Dr. Soetomo General Academic Hospital: Ref. No. 0818/LOE/301.4.2/III/2022). All respondents consented to participate in this study and agreed that their answers to the questionnaire would be analyzed and anonymously published.

Measurement of the perception and expectation was done using a questionnaire with variables referring to Indonesia's Ministry of Administrative and Bureaucratic Reform regulations number 14 of 2017 concerning Guidelines for Compiling a Community Satisfaction Survey for Public Service Providers. The nine variables are service terms and conditions, service procedures, completion time, cost, product compatibility, provider's competence, provider's behavior, handling of complaints, and facilities and infrastructure. The questionnaire consisted of two parts.

In the first part, sociodemographic data of the respondents were collected. In the second part, respondents give their rating on how much satisfaction they expect with the services to be provided and how satisfied they are with the services already provided by the hospital on 26 sub-indicators using a Likert scale (0=don't know, 1=very dissatisfied, 2=dissatisfied, 3=satisfied, and 4=very satisfied). The 26 sub-indicators were developed from the 9 measurement indicators that have been described previously. It should be noted that the number of sub-indicators tested in each department/unit may vary according to the type of service available. The survey questionnaire is presented in Table 1. Prior to dissemination, the instrument's validity and reliability were tested to collect valid data.

The data were coded, entered into a computer, and analyzed using Statistical Package for Social Sciences (SPSS) version 18 (USA). After excluding incomplete responses, we obtained 2121 respondents. Descriptive analysis with frequencies and percentages was generated to describe respondents' demographic profiles. In general, the analysis technique was carried out based on Indonesia's Ministry of Administrative and Bureaucratic Reform regulations number 14 of 2017 concerning Guidelines for Compiling a Community Satisfaction Survey for Public Service Providers.

Table 1. Survey questionnaire items

No.	Indicators	Sub-indicators
1	Service terms and conditions	Clarity of service terms and conditions Ease of fulfilling terms and conditions
2	Service procedures	Clarity of registration flow Clarity of service flow
3	Completion time	Timeliness of service according to schedule Rapid medical services by nurses/midwives Rapid medical services by general practitioners Rapid medical services by residents Rapid medical services by specialists Rapid services by receptionists
4	Cost	Cost affordability Compatibility between costs with facilities and services Clarity of cost details
5	Product compatibility	Compatibility between the services offered and those provided
6	Provider's competence	Competence of doctors Competence of nurses/midwives Competence of administrative officers
7	Provider's behavior	Courtesy and friendliness of doctors Courtesy and friendliness of midwives/nurses Courtesy and friendliness of administrative officers
8	Handling of complaints	Ease of expressing complaints Promptness in resolving complaints
9	Facilities and infrastructure	Room cleanliness and tidiness Convenience of waiting room Restroom's cleanliness Hospital environment safety

The performance of each department/unit is assessed from the respondent's perception on the services provided. Performance scores were calculated using each service element's "weighted average". Every element in the service has the same weight.

$$\begin{aligned} \text{Weighted average} &= \frac{\text{Indicator}}{\text{Total number of indicators}} \\ &= \frac{1}{9} \\ &= 0.11 \end{aligned}$$

Performance

$$= \frac{\text{Sum of perception score per indicators}}{\text{Total number of indicators rated}} \times \text{Weighted average}$$

Performance scores were converted by multiplying by 25. Score conversion of 25.00-64.99 was categorized as very poor performance, the score of 65.00-76.60 was classified as poor performance, the score 76.61-88.30 was classified as good performance, and the score of 88.31-100.00 is classified as excellent performance. SERVQUAL method was used to analyze the difference between the expected service (expectations) and the service perceived by the customer (perception) by subtracting expectation scores from perception scores to obtain P-E gap. P-E gap with a value of 0 indicates that there is no difference between customer expectation and customer perception, P-E gap <0 means that customer expectations exceed the perception of the services provided, and P-E > 0 means that the service provider's performance exceeds customer expectations.

Customer Satisfaction Index (CSI) was measured by comparing perceptions with expectations, then multiplied by 100%. Welch's analysis of variance (ANOVA) test was conducted to explore the difference of responses amongst the sociodemographic groups, and Games-Howell post hoc analysis was performed to determine exactly which groups are significantly different. However, 6 respondents were found not to have complete sociodemographic data, hence excluded from this analysis; p<0.05 is considered statistically significant.

## RESULTS

Findings from the preliminary study signified the validity of the questionnaire items with  $r > 0.05$  and Cronbach's alpha  $> 0.6$  when tested in respondents from all 31 departments (Table 2). The sociodemographic data of the respondents are shown in table 3. The distribution of gender is 38.8% male and 61.2% female. The age distribution of respondents in descending order from the most abundant to the least is 25-44 years (53.4%), 45-65 years old (34%), 15-24 years old (9.3%), and above 65 years old (3.3%). Amongst the 2121 respondents that completed the survey, 5 people (0.2%) are uneducated, while the majority of respondents completed secondary education (62.9%). The results of performance, expectation, and P-E gap analysis in 31 departments/units is shown in table 3. The service quality as measured by performance from 31 units at Dr. Soetomo General Academic Hospital, Surabaya, Indonesia, showed a mean score of 92.86. The mean value of customers' expectation to the services averaged 93,09, and the gap between their perception and expectation averaged -0.23.

Table 2. Validation and reliability instrument result of IKM survey on 2021 in 31 installations

No	Department/unit	n	R table	Corrected total item correlation	Cronbach's alpha
1.	Regenerative Biomaterial and Tissue Bank Unit	10	0.632	0.743	0.957
2.	Minimally Invasive Urology Unit	10	0.632	0.738	0.955
3.	Cardiovascular Diagnostics and Interventional Unit	15	0.154	0.670	0.937
4.	Obstetrics and Gynecology Ward	30	0.361	0.625	0.939
5.	Pediatric Ward	30	0.361	0.673	0.944
6.	Radiodiagnosics Unit	30	0.361	0.611	0.938
7.	Radiotherapy Unit	30	0.361	0.525	0.906
8.	Anatomic Pathology Unit	30	0.361	0.581	0.931
9.	Surgical Ward	30	0.361	0.585	0.928
10.	Hemodialysis Unit	15	0.514	0.657	0.931
11.	Nutrition Unit	15	0.514	0.646	0.918
12.	Intermediate Care and Infectious Disease Unit	15	0.514	0.692	0.952
13.	Graha Amerta	20	0.444	0.688	0.962
14.	Clinical Microbiology Unit	15	0.514	0.670	0.937
15.	Medical Ward	30	0.361	0.594	0.927
16.	Intensive Care and Reanimation Unit	15	0.514	0.670	0.937
17.	Dental and Mouth Unit	15	0.514	0.663	0.934
18.	Health Financing Unit	20	0.444	0.675	0.928
19.	Blood Transfusion Unit	15	0.514	0.633	0.928
20.	Outpatients Clinic	20	0.444	0.618	0.930
21.	Clinical Pathology Unit	20	0.444	0.550	0.893
22.	Medical Check Up Unit	20	0.444	0.646	0.941
23.	Medical Rehabilitation Unit	20	0.444	0.665	0.950
24.	Psychiatric Ward	10	0.632	0.743	0.960
25.	Pharmacy Unit	15	0.514	0.674	0.934
26.	Integrated Cardiac Service Center	20	0.444	0.641	0.941
27.	Mortuary Services	20	0.444	0.663	0.937
28.	Central Surgery Unit	20	0.444	0.550	0.881
29.	Forensic and Medicolegal Unit	15	0.514	0.639	0.928
30.	Palliative and Pain-free Unit	20	0.444	0.615	0.928
31.	Emergency Department	20	0.444	0.575	0.908

Table 3. Sociodemographic characteristics of the respondents

Variable	n (%)
Total (n)	2121 (100)
Gender	
Male	822 (38.8)
Female	1.299 (61.2)
Age	
15-24	197 (9.3)
25-44	1.132 (53.4)
45-65	722 (34.0)
>65	70 (3.3)
Education	
Uneducated	5 (0.2)
Primary	173 (8.2)
Secondary	1335 (62.9)
Diploma/bachelor	568 (26.8)
Master/doctoral	40 (1.9)

Meanwhile, the results of an independent analysis of 9 satisfaction indicators from 31 units at Dr. Soetomo General Academic Hospital, showed the correlation between performance and CSI (Figure 1). The mean performance and CSI score was 92.20 and 93.74, respectively. Handling of complaints was the lowest rated among the 9 indicators. The SERVQUAL analysis which showed perception-expectation gap (P-E gap) was presented in Figure 2, which indicated negative P-E gap value in all departments/units, with the greatest gap in the radiotherapy unit and the least gap in the medical rehabilitation unit.

The results of perception, expectation, P-E gap, and CSI measurement for each demographic group of respondents are shown in Table 5. Welch's ANOVA test revealed significant differences in the mean of perception, expectation, P-E Gap, and CSI across the education levels, as well as in respondents' perceptions of health services across age groups. However, no significant difference in the mean of perception, expectation, P-E Gap, and CSI was found between genders. Games-Howell post hoc analysis revealed that people with diploma or bachelor degree had a significantly lower perception and CSI score, as well as wider P-E gap (more negative score), compared to people with uneducated or primary, secondary, and magister or doctoral education ( $p < 0.05$ ).

Table 4. Measurements of performance and P-E gap in all 31 departments/units

Department/unit	n	Performance	P-E gap
Medical Rehabilitation Unit	66	99.08	-0.04
Nutrition Unit	66	98.90	-0.04
Hemodialysis Unit	66	98.82	-0.05
Blood Transfusion Unit	66	98.78	-0.05

Department/unit	n	Performance	P-E gap
Psychiatric Ward	24	97.95	-0.08
Central Surgery Unit	66	97.65	-0.09
Palliative and Pain-Free Unit	66	97.63	-0.09
Intensive Care and Reanimation Unit	66	97.52	-0.1
Radio Diagnostics Unit	88	96.58	-0.14
Pharmacy Unit	81	96.49	-0.14
Minimally Invasive Urology Unit	45	96.30	-0.15
Cardiovascular Diagnostics and Interventional Unit	32	94.93	-0.2
Mortuary Services	66	94.73	-0.21
Obstetrics and Gynecology Ward	76	93.90	-0.24
Dental and Mouth Unit	66	92.99	-0.28
Clinical Microbiology Unit	66	92.93	-0.28
Health Financing Unit	66	92.75	-0.29
Graha Amerta	66	92.60	-0.27
Integrated Cardiac	102	91.78	-0.31

Department/unit	n	Performance	P-E gap
Service Center Intermediate Care and Infectious Disease Unit	66	91.42	-0.34
Surgical Ward	117	90.97	-0.24
Medical Check Up Unit	66	89.76	-0.27
Pediatric Ward	101	88.47	-0.33
Outpatients Clinic	102	87.97	-0.38
Medical Ward	126	87.60	-0.3
Regenerative Biomaterial and Tissue Bank Unit	16	87.56	-0.28
Radiotherapy Unit	88	87.47	-0.5
Emergency Department	66	87.36	-0.42
Anatomic Pathology Unit	45	86.70	-0.17
Forensic and Medicolegal Unit	22	86.49	-0.47
Clinical Pathology Unit	66	84.60	-0.31
<b>Total</b>	<b>2.121</b>	<b>92.86</b>	<b>-0.23</b>

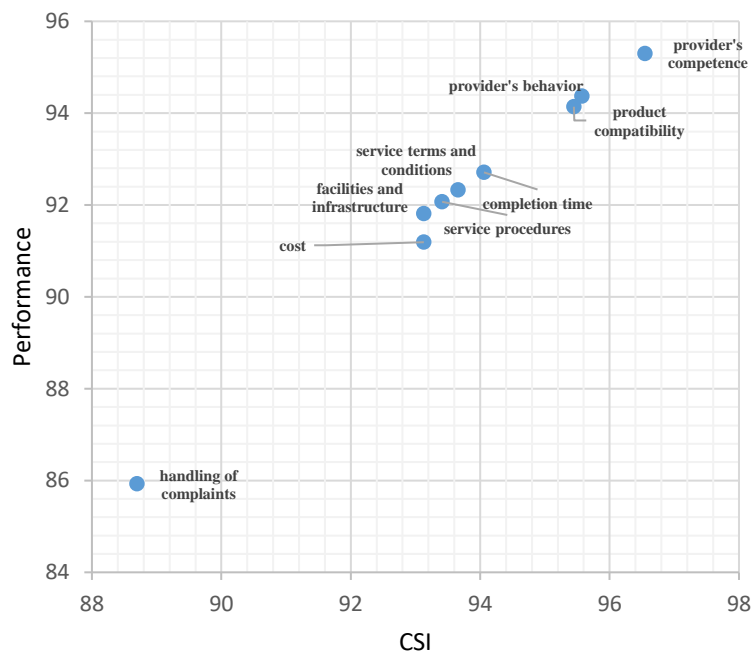


Figure 1. Performance scores and CSI scores of the 9 indicators in 31 departments/units

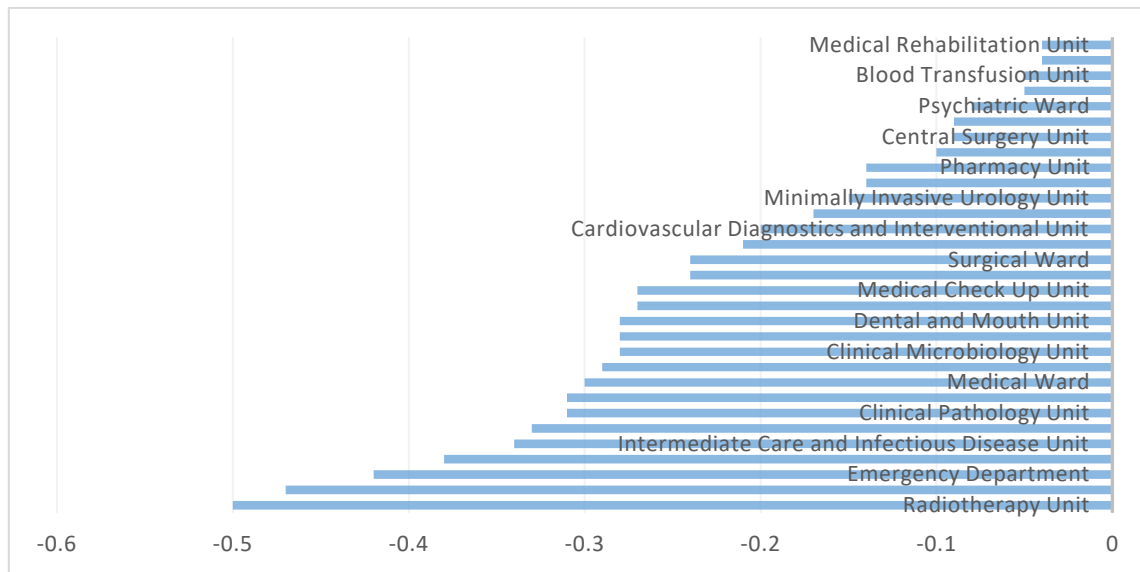


Figure 2. P-E gap analysis in all 31 departments/units

Table 5. Comparison between perception, expectation, P-E Gap, and CSI across respondents' demographic groups

Variable	P	p-value	E	p-value	P-E Gap	p-value	CSI	p-value
Total = 2115								
Gender								
Male	3.70	0.10	3.94	0.98	-0.24	0.90	0.94	0.09
Female	3.73		3.94		-0.21		0.95	
Age								
15-24	3.70	0.01	3.94	0.60	-0.22	0.07	0.95	0.08
25-44	3.70		3.94		-0.24		0.94	
45-65	3.75		3.95		-0.20		0.95	
>65	3.79		3.97		-0.18		0.95	
Education								
Uneducated/primary	3.77	<0.001	3.96	0.03	-0.19	0.001	0.95	0.001
Secondary	3.75		3.95		-0.20		0.95	
Diploma/Bachelor	3.64		3.92		-0.20		0.95	
Master/Doctoral	3.68		3.93		-0.17		0.96	

Hospital performance can be measured by standardized surveys of patients and relatives, which can then provide information to service providers about the aspects of services valued by the public. In Indonesia, the government requires every institution to conduct annual routine performance and customer satisfaction. Our study found that from the total 31 departments/units studied, 23 departments/units were rated as having excellent performance, while 8 units had good performance. No departments/units were rated as having poor performance.

Performance of hospital is an important dimension in delivering quality services to the customers, and as an effort to fulfill customer's satisfaction. A study by Fatima et al. (2018) found that better healthcare services quality produces satisfaction and loyalty among patients. Aspects of healthcare services (i.e., physical environment, customer's friendly

environment, responsiveness, communication, privacy and safety) have a positive relationship with patient loyalty mediated through patient satisfaction. Similar results were obtained by Alghamdi (2014) that patient satisfaction was significantly impacted by the health service quality. Therefore, healthcare providers need to pay special attention to satisfaction and patient loyalty because the concept of the relationship between these aspects had an influence on the image and profitability of the institution (Ramli 2019). This can happen because of the impact on increasing patient base and market share, which also increase profits through increased sales of services (Karatepe et al. 2005, Chang et al. 2013, Neupane & Devkota 2017). However, satisfied patients could still switch to other providers, so it showed the complexity of the relationship between patient satisfaction and loyalty (Astuti & Nagase 2014).



Perception and expectation measures are part of the SERVQUAL analysis that was first proposed by Parasuraman et al. in 1988 (Lee et al. 2000). SERVQUAL model consisted of a multiple-item scale measurement tool to assess services quality as measured by customer's perception on quality. Service quality can be defined as the gap between the level of service perceived and expected by customers (P-E gap). Since then, SERVQUAL had been adopted and widely used as a reliable and valid means of quality assessment in hospital environments (Mangold & Babakus 1991). In the healthcare environment, patient satisfaction is defined as the conclusion that patients and their families perceive after comparing between the services they received during the visit/stay and their previous expectations (Fang et al. 2019). Service quality is assessed based on customer satisfaction with the fulfillment of their expectations of the service provider. If the service received or perceived is in accordance with customer expectations, then the service quality will be perceived as good. On the other hand, if the service received or perceived is yet to meet customer expectations, the quality of the service will be perceived as bad. Thus, whether or not the quality of service depends on the ability of the service provider to consistently meet the expectations of its customers (Vinagre & Neves 2008).

A negative score on one or more SERVQUAL dimensions could give the signal for an in-depth investigation of that dimension to discover the factors interfering with the fulfillment of patient satisfaction with the services provided (Mangold & Babakus 1991). Ultimately, the results of patient satisfaction measurements carried out systematically and continuously could be expected to improve the quality and ultimately increase the profitability of hospitals.

In this study, the result of P-E gap measurement showed a negative value, indicating that the patient's expectations for services had not been met fully. Similar studies in hospitals in Riyadh and Pakistan reported the same results, where all aspects still had a negative P-E gap (Aghamolaei et al. 2014, Al-Momani 2016, Fatima et al. 2018, Sharifi et al. 2021). Patient satisfaction is influenced by expectations, and patient perceptions that have not been fully explained because the marketing-oriented conceptual model is not always appropriate for various health care conditions. Patients can have a complex set of important and relevant beliefs that cannot always be expressed in terms of satisfaction. Satisfaction survey results should be interpreted in terms of a number of assumptions about what patients actually mean by "satisfied" (Williams 1994). Jenkinson et al. (2002) reported that the main determinants of patient satisfaction were physical comfort, emotional support, and respect for patient preferences. Patient satisfaction refers to the patient's

perception of the quality of health services, including the provision of quality health services that are timely, well-organized, and patient-centered (Astuti & Nagase 2014).

Several factors can contribute to the satisfaction perceived by the patients. A cross-sectional study in a tertiary public hospital in Nepal found that age, gender, ethnicity, education, occupation, and religion were among the sociodemographic factors associated with patient satisfaction (Adhikari et al. 2021), while the research conducted by Elizar et al. (2020) proved that payment methods can be a factor that affects satisfaction and loyalty at the pediatric polyclinic of a private hospital in East Jakarta, Indonesia. A survey about satisfaction on medical services conducted in Wuhan, China, found that the service attitude of the medical staff affects patient satisfaction the greatest, followed by technology in medical services, and the convenience of the hospital (Fang et al. 2019). Amongst the 9 measurement indicators, only handling of complaint aspects is still rated "not good", with low rating on performance and CSI. Complaint handling includes service recovery, service quality, switching cost, service failure, service guarantee, and perceived value. Similar findings were also reported in Sragen Regency hospitals (Fatonah & Palupi 2020).

Based on the post hoc analysis, our study found that respondents who completed secondary education gave lower perception and expectation ratings than respondents who did not attend school/completed primary school education ( $p < 0.05$ ), and respondents who completed diploma/bachelor education gave the lowest ratings compared to the two previous groups ( $p < 0.001$ ). Respondents in the 25-44 years old age group had significantly lower perception scores compared to respondents from the 45-65 years old group ( $p = 0.02$ ). Previous studies related to the influence of sociodemographic factors on patient satisfaction with health services revealed various findings. Patients demographic characteristics had no significant effect on satisfaction (Fang et al. 2019), while other studies reported that age, health status, and race consistently had a statistically significant effect on satisfaction scores (Young et al. 2000). Hospital size also consistently had a significant effect on patient satisfaction. A study by Kelarijani et al. (2014) found that the level of patient satisfaction on health services has been associated with accommodation. Patients domiciled from rural areas are more satisfied than those from the cities due to cultural differences in the patient's perspective. In our study, diploma or bachelor graduated respondents have a lower satisfaction as indicated by low CSI (perception : expectation). Patient satisfaction is also related to their educational level. Patients with higher levels of education were less satisfied, since they had higher expectations on the

services, influenced by higher education, higher incomes and social status.

### Strength and limitation

There were several limitations to our study. This study used a retrospective method and some of the data obtained from respondents was incomplete. We did not take into consideration about the length of stay, marriage status, and outcome of treatment in the analysis, which in previous similar studies could affect customer satisfaction. Factors causing customers' satisfaction of certain indicators in some departments/units to be low could not be determined due to the limitations of the questionnaire model which only utilized a Likert scale as an assessment. In the future, a higher number of respondents is expected to be achieved by engagement of website or application-based surveys with more interactive interface and convenience for the younger respondents.

### CONCLUSION

The questionnaire that can be used to measure performance, as well as SERVQUAL analysis for hospital customers, was valid and reliable to be used in future service quality assessments. The health and administrative services in Dr. Soetomo General Academic Hospital were generally perceived as good by the customers. However, immediate action needs to be taken for further review and improvement of service quality related to the complaints handling indicators. P-E gap analysis in all departments showed that the service received by customers was still not up to their expectations. The fulfillment of customer satisfaction was not influenced by gender and age but is influenced by education level. Customers with diploma/bachelor's education tend to be less satisfied with the services. In the future, a broader analysis was needed regarding the influence of other sociodemographic factors, length of stay, the outcome of health services, and funding source of the patients on their satisfaction in order to know the gap in the hospital system. Furthermore, factors causing customer satisfaction/dissatisfaction with each service indicator must be investigated. Thus the health services can be improved.

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### Conflict of interest

None0

### Funding disclosure

P one0

### Author contribution

CRSP, IP, AD, and AAA contributed conceptual the study's idea. AMY, NH, and CRSP ware analysis data and revised tje manuscrirt. CRSP have final check the manuscript content.

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