THE IMPACT OF HOSPITAL MATERIAL INFRASTRUCTURE ELEMENTS AND HOSPITALIZATION QUALITY IN THE OPINION OF PATIENTS

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Purpose: Identification of infrastructure attributes that are crucial for achieving patient satisfaction.

Design/methodology/approach: Based on a literature review, an initial set of infrastructure elements (attributes) determining the level of patient satisfaction with hospitalization was identified. In the empirical part, these attributes were verified in two ways: through surveys conducted in a selected hospital and through research based on the Kano methodology (CAWI method).

Findings: It was found that the availability and cleanliness of sanitary rooms, markings of hospital units and communication routes, and facilities for people with disabilities significantly influence the level of satisfaction with hospitalization. There were indicated some areas in which the managers of the studied hospital could make some improvements. For example, an attribute where changes could be recommended is I5 - facilities for people with disabilities.

Research limitations/implications: The publication presents the results of the literature review, which can be expanded in further research on the topic discussed. However, this study is limited to the relatively small group of patients and respondents who participated in surveys. These limitations concern also the geographical area and the number of hospital facilities, which suggest possible directions for future research.

Practical implications: The results of the study may have practical applications in the area of hospital management. Satisfaction surveys completed by patients from various hospitals will identify the infrastructure elements with the lowest patient satisfaction. Therefore, they may constitute the basis for developing guidelines to improve satisfaction with hospitalization. Additionally, the Kano methodology indicates which attributes are most important to patients.

Social implications: Introducing changes in the areas of infrastructure elements indicated in the study may result not only in increased patient satisfaction with the hospitalization process, but also in a real improvement in the conditions in which patients stay. This may be important for their well-being and could influence the recovery process.

Originality/value: The article presents two-track research conducted among the public and actual patients of a provincial public hospital. The methodology prepared in this way can be helpful for hospital managers because it provides insight into social expectations and the actual assessment of the examined infrastructure attributes.

1. Introduction

The mail goal of the activity of hospitals is providing medical care to the patients. Despite visible changes in hospitalization over recent years, driven by increasingly higher standards and requirements of medical care, entities such as hospitals must constantly ensure the quality of the services provided. This is confirmed by numerous studies in this field (Haller, Quenon, 2014; Marley et al., 2004). Hospitalization however, regardless of whether planned or emergency, is often associated with some mental discomfort for the patient. The hospitalisation itself, even if it is not related to surgery or procedure, but rather to regular health check-up, can be stressful. Obtaining patient satisfaction with the hospitalization process is therefore a difficult task and depends on many factors (Gavurova et al., 2020; Marcinów, Olejniczak, 2011), which can be binded into certain groups. The first is the quality of medical care and the general atmosphere. The important things are: accuracy of diagnosis, effectiveness of treatment, professionalism and politeness of medical staff, as well as assessment of non-medical staff, perception of technical medical skills and access to a medical centre (Salomon et al., 1999; Meesala, Paul, 2018). Another factor is communication between the patient and medical personnel, which should be effective, clear and maintained at a high level (Fortin, 2002; Moslehpour et al., 2022). Many researchers also refer to the availability of personnel and information (Keller et al., 2014; Lang, 2012; Gabryšová, Ciechomski, 2023) as one of the factors influencing patient satisfaction. Another group of factors is the patient's comfort (reflected primarily in cleanliness and appropriate accommodation conditions). Other researchers also mention factors such as waiting time for tests, consultations, and treatments, or even respect for patient rights (Xie, Or, 2017; Eilers, 2004; Kravitz, 2001). However, the group of factors that is least flexible due to the difficulties in implementing changes and high costs is infrastructure. It is also the least frequently described area in the literature, and at the same time it influences the level of patient satisfaction. As Islam and Habib (2023) note, the development of hospital infrastructure is a key element in achieving sustainable development in hospital supply chain management and ensures long-term financial stability and improved patient care.

Therefore, it becomes necessary to indicate the attributes of the hospital infrastructure that are important in the opinion of patients, and translate them into the level of satisfaction with the hospitalisation. A research problem was formulated regarding identifying public opinion on the importance of selected attributes related to hospital infrastructure. The goal of this study is to identify the infrastructure attributes that are crucial for achieving patient satisfaction during

hospitalization and to indicate those, improvement of which can increase the level of patient satisfaction. Therefore, the following research hypothesis was formulated: Elements of hospital infrastructure determine the level of patient satisfaction.

Verification of the hypothesis and achievement of the research goal allowed for indicating the directions of changes in the area of infrastructure.

Achieving the assumed goal required conducting survey research. Most studies in the field of patient satisfaction refer to the issue of the quality of medical services, including hospital services, usually on the base of selected method, e.g. SERVQUEL (Hekmatpou et al., 2012; Došen et al., 2020), or Kano (Materla et al., 2019; Christoglou et al., 2006; Priyono, Yulita, 2017). In this study, we decided to examine the impact of elements of hospital infrastructure identified on the basis of a literature review and focus meetings with representatives of a selected health care unit. The focus group study was carried out on 6 February 2023 at the Blessed Virgin Mary Regional Specialist Hospital in Czestochowa. The focus study involved 10 patients whose health condition allowed for this type of action. Patients were randomly selected but differed in gender, age, and education. The focus study was conducted by one of the authors of this study. The result of this meeting was a list of hospital infrastructure attributes, the importance of which was verified in a further stage of the main study.

The main research consisted of two parts and was conducted in several stages. Two different survey questionnaires were developed. One of them was made available to patients of the research entity - a general hospital located in the Silesian Voivodship. In this part of the study, patients assessed individual attributes on an ordinal scale. The second questionnaire - based on the KANO methodology - was posted on social media. In this case, anyone with a link to the survey could be a respondent. This part of the study aimed to determine the importance of individual infrastructure attributes. The results of both studies were compared and then analysed. On the base of the analyse, we identified the areas of greatest importance for public opinion and the areas requiring improvement.

2. Material infrastructure and quality of hospitalization - literature review

Undertaking research in the area of assessing patients' level of satisfaction determined by the infrastructure provided by the hospital was possible after a prior review of the literature on the quality of hospitalization. The researchers used the ScienceDirect database in order to identify key research works. It was found, that approximately over 21,000 English-language studies dating from 2010-2023 in the field of hospital patient satisfaction exist in open access, and the number of review articles alone is almost 3000. Published work shows that patient satisfaction is an important outcome that is considered a determinant of quality of care (Asamrew et al., 2020). Many factors influence patient satisfaction in hospitals. For example

Hekmatpou et al. (2012) showed that there are significant differences between patient expectations and perceptions of quality in teaching hospitals, with accessibility being the most serious issue. Another study (Sarwar, 2014) conducted a qualitative study in Malaysian private hospitals and identified cost and location, quality of patient care, and facility accessibility as important aspects of health care service quality. Other researchers (Sharmila, Krishnan, 2013) focused on private corporate hospitals and found that physicians generally cared for their patients, but noted some discomfort with the quality of patient services. The study presented by Došen et al. assessed the quality of healthcare services in a public university hospital in Croatia and highlighted the need for improvement in dimensions such as responsiveness and tangibility. The researchers showed that patients prioritize the quality of medical care, the polite attitude of personnel, and a comfortable hospital environment. Shareef et al. (2020) research identified areas such as front desk personnel, nursing care, housekeeping, doctor-patient interaction, and pharmaceutical services as important to patient satisfaction. In turn, Asamrew et al. (2020) emphasized the importance of doctors' services, availability of laboratory and pharmacy services, pain management, and facility amenities. Other researchers (García-Alfranca et. al., 2018) point to the importance of timely response and case resolution in pre-hospital emergency services. Overall, this work indicates that patient satisfaction is influenced by factors such as quality of care, personnel behavior, facility cleanliness, and efficient provision of the service.

In the next step, the search for studies was narrowed to those focusing on the connection between hospital infrastructure and patient satisfaction. After defining the key term "patient satisfaction", narrowing the research period to 2010-2023 and entering the term "hospital infrastructure" in the field containing title, abstract or author-specified keywords, the result was 215 studies (Table 1). About a quarter of these studies is published under open access and open archives rights, and these are the focus of this work. Among the studies identified at this stage, it was discovered that many of them concerned equipping hospitals with IT infrastructure systems used in the work of personnel, therefore they were excluded from the research. Studies that did not fit were also excluded from the review, including, for example, studies on job satisfaction of medical personnel or management of hospital pharmacy activities.

Table 1.
Number of included papers in the research

Patient satisfaction	number of papers
Hospital infrastructure (2010-2023)	215
Open access and open archive	59
Open access - excluded papers	39
Reasons: IT infrastructure, job satisfaction of staff, others	
Results	20
Open access - Included papers	

Source: Own study.

The works qualified for the study show that hospital infrastructure has a significant impact on patient satisfaction (Nyundo et al., 2023; Hamed, Salem, 2014). Mariano et al. (2022) indicate that in order to improve the perception of the overall quality of care, it is necessary to provide appropriate infrastructure and equipment in health centres. The Triyono 2020 study found that competencies and infrastructure have a significant impact on patient satisfaction in a health centre. Amankwah et al. study (2022) showed that the quality of health care infrastructure and equipment influences the connection between health care delivery and patient satisfaction. Rafik 2021 showed that the quality of hospital services and facilities significantly affects patient satisfaction. Yakin 2022 found a positive correlation between physical facility infrastructure and patient satisfaction in the context of Covid-19 patients. The researchers also pointed to elements related to hospital infrastructure such as: hygienic atmosphere (Liang et al. 2021; Shah et al., 2021; Liu et al., 2021), less noise, more natural light, guest-friendly amenities, room furnishings and hotel-like atmosphere (Hwang et al., 2020), condition of waiting rooms and consultation rooms (Nuri et al., 2019), physical comfort and privacy of the patients (Andres et al., 2019; Akthar et al., 2023). Overall, these studies highlight the importance of maintaining and improving hospital infrastructure to increase patient satisfaction. The literature on the subject also includes studies using the Kano model to classify and improve customer requirements in the context of hospitals and healthcare infrastructure (Shahin, Akhaskeh, 2017, Santhoshkumar et al., 2022). Materla 2019 conducted a systematic literature review and highlighted the potential of the Kano model to improve the quality of healthcare services and understand customer needs. Christoglou 2006 applied the Kano model to the study of the quality of patient service and identified the importance of personal knowledge, employee politeness and instilling trust. Priyono 2017 study integrated the Kano model with quality function implementation to identify service attributes and improvement strategies in the hospital front office. The cited studies confirm the possibility of using the Kano model in understanding and increasing customer requirements in hospitals and infrastructure.

3. Methodology of the research

The study aimed at checking how elements of hospital infrastructure affect the level of patient satisfaction was carried out in several stages. The study process is presented in Fig. 1.

Stage I
- Identification of infrastructure elements influencing patient satisfaction - based on literature research

Stage II
- Selection and reduction of infrastructure elements identified based on literature research that influence patient satisfaction based on a focus group study in a randomly selected group of patients and consultations with representatives of the research entity

Stage III
- Development of a diagnostic tool to define expectations regarding elements of hospital infrastructure - based on the Kano methodology

Stage IV
- Development of a diagnostic tool to assess patient satisfaction with their hospital stay in relation to elements of hospital infrastructure

Stage V
- Research implementation

Stage VI
- Analysis and conclusions from the conducted research

Stage VII
- Indication of directions for further research

Figure 1. Stages of the research procedure.

Source: Own study.

During the focus group study being the next step in the research procedure, factors related to hospital infrastructure identified at the stage of literature research were limited to crucial factors, and were additionally supplemented in areas not indicated in the literature review. The focus group study was carried out in February 2023 at the Internal Medicine Unit of the Blessed Virgin Mary Regional Specialist Hospital in Czestochowa. The study involved 10 patients of different gender, age and education.

The effect of the focus group study was a list of factors determining the level of patient satisfaction, which was the basis for preparing two research tools for two separate parts of the study:

- a survey questionnaire identifying expectations regarding elements of hospital infrastructure (KANO),
- a survey questionnaire assessing satisfaction with the hospital stay in relation to elements of hospital infrastructure.

The study distinguished the following elements of hospital infrastructure (further referred to as attributes): hospital room equipment (I1), cleanliness of the hospital room (I2), availability and cleanliness of sanitary rooms (I3), marking of hospital units and communication routes (I4), facilities for people with disabilities (I5) and the availability of a rest and relaxation area (I6).

The first part of the study, including the first questionnaire, was based on the Kano methodology, which helps to understand and classify customer expectations regarding products or services, in this case respondents' expectations regarding the hospitalization process. The surveys were collected using the CAWI (Computer-Assisted Web Interview) method, and responses were obtained from 212 respondents who were provided with a link to the form via social media. In this case, the respondents did not have to be patients of the hospital selected for the study. The important part was their assessments of selected attributes influencing the perception of the quality of hospital services. An example of a question regarding the I1 attribute is presented in Table 2.

Table 2.
An example question related to attribute I1

I1. Hospital room equipped with ergonomic equipment, including furniture with the possibility of storing personal belongings and eating meals, a system for calling for personnel's assistance, and others									
1a. What if it is the case? (functional form of the question)					1b. What if it is not the case? (dysfunctional form of the question)				
like it	expect it	don't care	live with it	dislike it	like it	expect it	don't care	live with it	dislike it

Source: Own study based on Kano's Methods.

Then, in accordance with the Kano methodology guidelines, respondents' answers regarding the distinguished infrastructure attributes were assigned to a specific type, i.e.: Q – Questionable, A – Attractive, R – Reverse, I – Indifferent, O – One-dimensional and M –Must-be (table 3).

Table 3.
Kano evaluation table

Requirements		Disfunctional				
		Like it	Expect it	Don't care	Live with it	Dislike it
Functional	Like it	Q	A	A	A	O
	Expect it	R	I	I	I	M
	Don't care	R	I	I	I	M
	Live with it	R	I	I	I	M
	Dislike it	R	R	R	R	Q

Source: Own study based on Kano's Methods.

The existence of correlation between a given infrastructure attribute and patient satisfaction was checked using the coefficients of satisfaction (CC) and patient dissatisfaction (DC) - in accordance with the formulas proposed by Berger et al. (1993):

$$CC = (A+O)/(A+O+M+I) \tag{1}$$

$$DC = (O+M)/(A+O+M+I) \tag{2}$$

The satisfaction coefficient (CC) can range from zero to one. The higher the CC value, the greater the impact of a given attribute on patient satisfaction. Value of the dissatisfaction coefficient (DC) close to one means that the patient is dissatisfied with a given attribute (Berger et al., 1993; Matzler, Hinterhuber, 1998).

The second part of the study was carried out in the general hospital operating in the Silesian Voivodship. The selected study entity consists of two main hospital units, including 32 departments enabling the hospitalization of over 800 patients at the same time. The hospital also performs the so-called one-day admissions or procedures not exceeding one day that do not require hospitalization. In this case, the infrastructure attributes were rated by patients on a five-point scale, where a score of 1 meant that the patient was very dissatisfied and a score of 5 meant that the patient was very satisfied. In this case, statistical analysis of the study results was performed using IBM SPSS Statistics 28, PS IMAGO PRO 8.0 software.

4. Results

In the first part of the study, based on the KANO methodology, in July and August 2023, responses were obtained from 212 respondents. In the second part of the study, 147 forms were collected from patients of the selected hospital. Responses from patients of the selected hospital were also collected from July to the end of August 2023. The characteristics of the respondents in both studies are presented in Figures 2a and 2b.
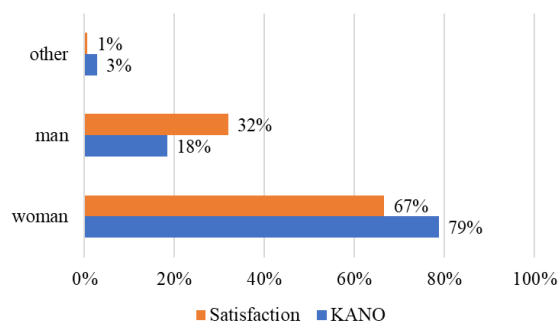
Figure 2a. Respondents gender.

Source: Own study based on empirical research.
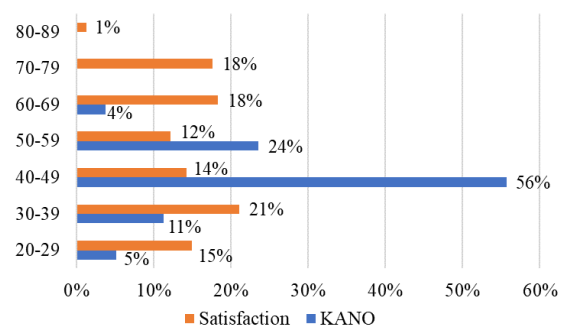
Figure 2b. Respondents age.

Source: Own study based on empirical research.

Analysing the distribution of answers in the context of gender, it can be noticed that in both studies the largest groups of respondents were women (67% of hospital patients and 79% of Kano survey respondents). In the case of an online survey, such high level of participation of women can be explained by the fact that women are more willing to take steps to complete the questionnaire and are more active social media users. Such high participation of women in the study conducted in the hospital was influenced by the specificity of the departments where the completed questionnaires were collected (Fig. 3a-b). Moreover, the average age of hospital patient respondents was much higher than that of online respondents and was over 50. The share of patients in the hospital study in the age group 60 and over was 37%.
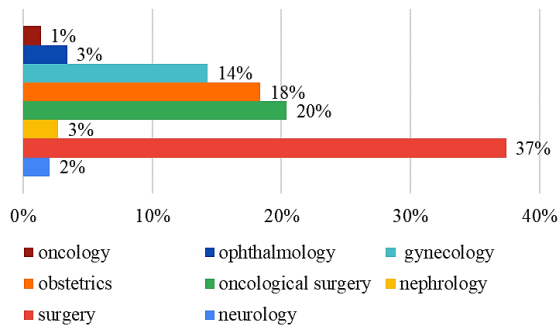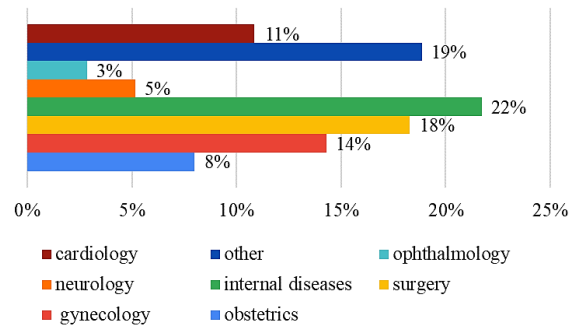
Figure 3a. Hospital's patients.

Source: Own study based on empirical research.

Figure 3b. Kano respondents.

Source: Own study based on empirical research.

Analyzing the distribution of answers given by hospital patients in the context of the ward where they were hospitalized, it can be noted that a total of 32% of respondents were obstetrics and gynaecology patients, i.e. wards typically dedicated to women. Other branches in the online survey included: rheumatology, otolaryngology, rheumatology, allergist, children's, covid and rehabilitation.

The next step of the study (stage VI) was the analysis of the results obtained in the survey. According to the Kano methodology, for each of the 6 attributes (I1 - hospital room equipment, I2 - cleanliness of the hospital room, I3 - availability and cleanliness of sanitary rooms, I4 - marking of hospital units and communication routes, I5 - facilities for people with disabilities and I6 - availability of a rest and relaxation area), the statistics of the answers provided by the respondents were analyzed (Table 4).

Table 4.

Response statistics from respondents according to Kano methodology for attributes I1-I6

Attribute	M	O	A	I	Class	CC	DC
I1	15%	17%	33%	34%	I	0.51	0.33
I2	19%	17%	30%	34%	I	0.47	0.36
I3	21%	29%	31%	19%	A	0.60	0.50
I4	23%	25%	32%	21%	A	0.56	0.47
I5	19%	22%	32%	27%	A	0.54	0.41
I6	8%	6%	36%	50%	I	0.42	0.14

Source: Own study based on empirical research.

Kano's analysis shows that 3 attributes: I3 (accessibility and cleanliness of sanitary rooms), I4 (marking of hospital units and communication routes) and I5 (facilities for people with disabilities) were classified as class A (Attractive). This means that these attributes are most important for achieving a state of satisfaction among respondents. This is confirmed by satisfaction coefficient (CC), the highest level of which - 0.6 - was recorded for the I3 attribute. In turn, the remaining attributes, i.e. I1 (hospital room equipment), I2 (cleanliness of the hospital room), and I6 (availability of the rest and relaxation area) were classified as class I (Indifferent), meaning a neutral state. Interpreting the results, it can be concluded that respondents perceive the advantages of these attributes to a moderate extent. Therefore, these attributes will not have a significant impact on patients' feeling of satisfaction or

dissatisfaction. This is confirmed by the satisfaction coefficients (CC), where the values for this set of attributes are in the range of 0.42-0.51.

The next step in this stage was the statistical analysis of the results of the survey conducted in the hospital selected for the study (table 5).

Table 5.
Basic statistics for attributes I1-I6 in patients' responses

Statistics		Attribute					
		I1	I2	I3	I4	I5	I6
Mean		4.42	4.70	4.59	4.49	4.38	3.72
Median		5.00	5.00	5.00	5.00	5.00	4.00
Mode		5	5	5	5	5	5
Standard deviation		.829	.645	.835	.912	.967	1.464
Sample variance		.687	.417	.696	.831	.934	2.145
Skewness		-1.671	-2.258	-2.245	-1.752	-1.634	-.851
Standard error of skewness		.201	.200	,200	.201	.208	.209
Kurtosis		3.215	4.643	4.612	2.161	2.226	-.708
Standard error of kurtosis		.399	.397	.397	.399	.413	.416
Minimum		1	2	1	1	1	1
Maximum		5	5	5	5	5	5
Meter		146	147	147	146	136	134
Percentiles	25	4.00	5.00	4.00	4.00	4.00	3.00
	50	5.00	5.00	5.00	5.00	5.00	4.00
	75	5.00	5.00	5.00	5.00	5.00	5.00

Source: Own study based on empirical research.

The average scores for most attributes (I1, I2, I3, I4, and I5) are quite high, suggesting that respondents are generally satisfied with these elements of the infrastructure of the hospital environment. The highest average rating is 4.70 for I2, which means that the cleanliness of the hospital room is rated the highest. The skewness is negative for all features, indicating that rating distributions are skewed towards higher values and most respondents rate these features at higher levels of satisfaction. The median values for most features are 5, which suggests that the middle value of the rating distributions is the highest, meaning that many people gave the maximum ratings. The standard deviation is relatively low for most characteristics, which means that the ratings are close to each other and have little variability. Kurtosis varies by attribute, but in most cases it is greater than 3, which suggests that the distributions of scores are more skewed than a normal distribution.

5. Conclusion and summary

The study identified six important attributes related to hospital infrastructure: hospital room equipment (Mariano et al., 2022; Hwang et al., 2020), hospital room cleanliness (Liang et al., 2021; Shah et al., 2021), availability and cleanliness of sanitary rooms (Liu et al., 2021), marking of hospital units and communication routes (Santhoshkumar et al., 2022), facilities for

people with disabilities (Akthar et al., 2023) and the availability of a rest and relaxation area (Andres et al., 2019). It was possible to identify these attributes on the basis of a literature review and a focus meeting with representatives of the general hospital selected for the study.

Two parallel main surveys were carried out to achieve the goal of the study (identification of attributes in the area of infrastructure that are most important for achieving patient satisfaction during hospitalization and identification of these improvement of which can increase the level of patient satisfaction). Overall, respondents appear to be satisfied with most attributes of hospital infrastructure. Based on the Kano methodology, it was shown that the availability and cleanliness of sanitary rooms, markings of hospital units and communication routes, and facilities for people with disabilities significantly influence the level of satisfaction with hospitalization. However, based on the analysis of the results of both studies, it is possible to indicate some areas in which the management of the studied hospital could make some improvements. For example, an attribute where changes could be recommended is attribute I5 - facilities for people with disabilities. In this case, the average patient satisfaction score was 4.38, and additionally, this attribute, according to the Kano methodology, belongs to class A (Attractive) with a quite high CC index of 0.54. In turn, in the area related to attribute I6 - availability of a rest and relaxation zone - the average rating of patients was the lowest (3.72) and even though this attribute was classified in the Kano study as I (Indifferent), i.e. neutral, with a recorded satisfaction index at a moderate level of 0.42, this type of facilities could to some extent influence the level of patient satisfaction during hospitalization.

References

1. Akthar, N., Nayak, S., Pai, P.Y. (2023). Determinants of patient satisfaction in Asia: Evidence from systematic review of literature. *Clinical Epidemiology and Global Health, 23,* p. 101393.
2. Amankwah, O., Choong, W.W., Boakye-Agyeman, N.A. (2022). Patients satisfaction of core health-care business: the mediating effect of the quality of health-care infrastructure and equipment. *Journal of Facilities Management.*
3. Andres, E.B., Song, W., Song, W., Johnston, J.M. (2019). Can hospital accreditation enhance patient experience? Longitudinal evidence from a Hong Kong hospital patient experience survey. *BMC Health Serv. Res.,19, 1,* pp. 1-9.
4. Asamrew, N., Endris, A.A., Tadesse, M. (2020). Level of Patient Satisfaction with Inpatient Services and Its Determinants: A Study of a Specialized Hospital in Ethiopia. *Journal of Environmental and Public Health*, *473469*, pp. 1-12.

5. Berger, C., Blauth, R.E., Boger, D., Bolster, C.J., Burchill, G., DuMouchel, W., Pouliot, F., Richter, R., Rubinoff, A., Shen, D., Timko, M., Walden, D. (1993). *Kano's methods for understanding customer-defined quality*.

6. Christoglou, K., Vassiliadis, C.A., Sigalas, I. (2006). Using SERVQUAL and Kano research techniques in a patient service quality survey. *World hospitals and health services: the official Journal of the International Hospital Federation, 42 2*, 21-6.

7. Došen, Đ.O., Skare, V., Čerfalvi, V., Benceković, Ž., Komarac, T. (2020). Assessment of the Quality of Public Hospital Healthcare Services by using SERVQUAL. *Acta Clinica Croatica, 59,* pp.285-293.

8. Eilers, G.M. (2004). Improving Patient Satisfaction With Waiting Time. *Journal of American College Health, 53*, 41-48.

9. Gabryšová, M., Ciechomski, W. (2023). The management of hospital marketing communication. *Scientific Papers Of Silesian University Of Technology, Organization And Management Series*, *173*, pp. 179-193.

10. García-Alfranca, F., Puig, A., Galup, C., Aguado, H., Cerdá, I., Guilabert, M., Pérez-Jover, V., Carrillo, I., Mira, J.J. (2018). Patient Satisfaction with Pre-Hospital Emergency Services. A Qualitative Study Comparing Professionals' and Patients' Views. *International Journal of Environmental Research and Public Health, 15,* pp. 1-31.

11. Gavurova. B., Kovac. V., Khouri. S., (2020). Purpose of patient satisfaction for efficient management of healthcare provision. *Polish Journal of Management Studies, 22(1)*, pp. 134-146.

12. Haller, G.H., Quenon, J.L. (2014). Quality improvement initiatives in hospitals: which one to choose. *Revue Medicale Suisse*, *10(431),* pp.1143-7.

13. Hamed, M.A.G., Salem, G.M. (2014). Factors affecting patients' satisfaction in nuclear medicine department in Egypt. *The Egyptian Journal of Radiology and Nuclear Medicine, 45, 1*, pp. 219-224.

14. Hekmatpou, D., Sorani, M., Farazi, A., Fallahi, Z., Lashgarara, B. (2012). A survey on the quality of medical services in teaching hospitals of Arak University of Medical Sciences with SERVQUL model in Arak. *Arak Medical University Journal*, *15*, pp. 1-9.

15. Hwang, J., Vu, G.T., Tran, B.X. et al. (2020). Measuring satisfaction with health care services for Vietnamese patients with cardiovascular diseases. *PLoS One., 15, 6*, pp. 1-15.

16. Islam, S., Mamun Habib (2023). Achieving Sustainability in Hospital Supply Chain Management through Hospital Infrastructure Development. *International Supply Chain Technology Journal*, *9, 5*.

17. Keller, A.C., Bergman, M.M., Heinzmann, C., Todorov, A., Weber, H., Heberer, M. (2014). The relationship between hospital patients' ratings of quality of care and communication. *International journal for quality in health care: journal of the International Society for Quality in Health Care, 26, 1,* pp. 26-33.

18. Kravitz, R.H. (2001). Measuring Patients' Expectations and Requests. *Annals of Internal Medicine, 134*, pp. 881-888.

19. Lang, E.V. (2012). A Better Patient Experience Through Better Communication. *Journal Of Radiology Nursing*, *31, 4*, pp. 114-119.

20. Liang, H., Xue, Y., Zhang, ZR. (2021). Patient satisfaction in China: a national survey of inpatients and outpatients. *BMJ Open.*, *11(9),* pp. 1-9.

21. Liu, M., Hu, L., Guo, R. et al. (2021). The influence of patient and hospital characteristics on inpatient satisfaction at Beijing District-level hospitals. *Patient Prefer Adherence*, *15*, pp. 1451-1460.

22. Marcinów, K., Olejniczak, D. (2011). Opinie i oczekiwania pacjentów względem systemu opieki zdrowotnej. *Borgis - Medycyna Rodzinna, 4,* 99-104.

23. Mariano, A.M., da Silva, E.K, Melo Mariano, A.P., Ciulla, M., (2022). The HEALTHQUAL model: Evaluating the Quality of Health Service in the Federal District, Brazil. *Procedia Computer Science, 214,* pp. 1106-1112.

24. Marley, K.A., Collier, D.A., Goldstein, S.M. (2004). The role of clinical and process quality in achieving patient satisfaction in hospitals. *Decis. Sci., 35,* pp. 349-368.

25. Materla, T., Cudney, E.A., Antony, J. (2019). The application of Kano model in the healthcare industry: a systematic literature review. *Total Quality Management & Business Excellence, 30,* 660 - 681.

26. Matzler, K., Hinterhuber, H.H. (1998) How to make product development projects more successful by integrating Kano's model of customer satisfaction into quality function deployment. *Technovation*, *18, 1*, pp. 25-38.

27. Meesala, A., Paul, J. (2018). Service quality, consumer satisfaction and loyalty in hospitals: Thinking for the future. *Journal of Retailing and Consumer Services, 40*, pp. 261-269.

28. Moslehpour, M., Shalehah, A., Rahman, F.F., Lin, K. (2022). The Effect of Physician Communication on Inpatient Satisfaction. *Healthcare, 10*.

29. Nuri, N.N., Sarker, M., Ahmed, H.U., Hossain, M.D. (2019). Beiersmann C, Jahn A. Experience and perceived quality of care of patients and their attendants in a specialized mental hospital in Bangladesh. *International Journal of Mental Health System, 13, 1*, pp. 1-12.

30. Nyundo, M., Kayondo, K., Gasakure, M., Urimubabo, J.Ch., Houben, J.J., Limgba, A., Nifasha, A., Gashegu, J., Detry, O. (2023). Patient-reported outcome, perception and satisfaction after laparoscopic cholecystectomy in Kigali, Rwanda. *Surgery Open Science, 15,* pp. 67-72.

31. Priyono, A., Yulita, A. (2017). *Integrating Kano Model and Quality Function Deployment for designing service in hospital front office*.

32. Rafik, A., Suardhita, N., Sugeng, I.S. (2021). The influence of quality of services and hospital facilities on patient satisfaction. *Journal of Economics and Business Letters, 1(4),* pp. 19-26.

33. Salomon, L., Gasquet, I., Mesbah, M., Ravaud, P. (1999). Construction of a scale measuring inpatients' opinion on quality of care. *International Journal for Quality in Health Care, 11,* pp. 507-516.

34. Santhoshkumar, F., Jeyarajasekar, T., Kumar, S.A. (2022). Kano's model for customer satisfaction analysis of a hospital. *International Journal Of Health Sciences, 6(S1),* 11081-11089.

35. Sarwar, A. (2014). Healthcare Services Quality in Malaysian Private Hospitals: A Qualitative Study. *International Journal Of Hospital Research*, *3*, pp. 103-112.

36. Shah, A.M., Yan, X., Tariq, S., Ali, M. (2021). What patients like or dislike in physicians: analyzing drivers of patient satisfaction and dissatisfaction using a digital topic modeling approach. *Inf. Process Manag., 58(3),* p. 102516.

37. Shahin, A., Akasheh, S. (2017). Classifying customer requirements using Kano model and Kano map: the case of hospital services. *International Journal of Productivity and Quality Management, 21,* 500-515.

38. Shareef, A., Debata, I., Hs, S., Brijesh, K. (2020). A study on Patient's fulfillment with reference to our hospital services. *International Journal of Orthopaedics Sciences, 6*, pp. 929-933.

39. Sharmila, S., Krishnan, J. (2013). Has the Service Quality in Private Corporate Hospitals meet the Patient Expectations? A Study about Hospital Quality in Chennai. *Asia Pacific Journal Of Marketing and Management Review, 2*, pp. 19-35.

40. Triyono, A., Suwaji, S. (2020). *Influence of competency and facilities towards inpatient patient satisfaction at public health center in Indragiri Hulu Regency*.

41. Xie, Z., Or, C.K. (2017). Associations Between Waiting Times, Service Times, and Patient Satisfaction in an Endocrinology Outpatient Department: A Time Study and Questionnaire Survey. *Inquiry: A Journal of Medical Care Organization, Provision and Financing, 54*.

42. Yakin, R., Rizany, I., Adawiyah, R., Fikri, M.K., Azhar, A. (2022). Analysis of Infrastructure for Covid-19 Patient Satisfaction at RSDI Banjarbaru City. *Dunia Keperawatan: Jurnal Keperawatan dan Kesehatan*, *2*, p. 2.