

BMJ Open What do patients value? A retrospective study of compliment letters from a single institution

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ABSTRACT

Objectives This study aimed to analyse patient-initiated compliment letters from a single institution, identify the key elements that patients value and offer actionable insights to enhance patient-centred care.

Design A retrospective, single-institution study using the Healthcare Complaints Analysis Tool (HCAT), text network analysis and latent Dirichlet allocation (LDA) topic modelling on patient compliment letters to pinpoint key valued care elements.

Setting A newly established general hospital in Gwangmyeong, South Korea, opened on 22 March 2022.

Participants A total of 1213 compliment letters were collected through the hospital's feedback system, which accepted both online and on-site submissions between 25 March 2022 and 28 June 2024. Letters lacking substantive descriptive content and those containing purely administrative requests were excluded.

Primary and secondary outcome measures The HCAT was adapted to categorise positive statements into clinical, management and relationship domains, along with six stages of care. Inter-rater reliability was evaluated using Gwet's AC1 statistic. A text network analysis, applying a term frequency-inverse document frequency approach, was conducted to identify prominent keywords. Subsequently, LDA was performed to extract thematic topics.

Results Most compliments concerned the 'relationship' domain (62%), particularly during the care in the ward stage (56%). Keyword analysis indicated that the most frequently mentioned terms were 'gratitude', 'kindness', 'nurse', 'doctor' and 'heart/mind', underscoring patients' high valuation of positive interactions, professional competence and compassionate communication with medical staff. Topic modelling identified three primary topics, namely, 'appreciation of nursing care' (39%), 'professionalism in surgery and treatment' (35%) and 'effective communication during consultations' (26%).

Conclusions Positive relationships with medical staff, particularly kindness, professionalism and effective communication, influence patient satisfaction. Patient compliment letters serve as important indicators of exceptional care and can inform quality improvement initiatives. Healthcare institutions should leverage these insights to enhance patient-centred services by strengthening patient-provider relationships and promoting a culture of excellence.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Authentic patient-initiated compliment letters from the hospital's online and on-site feedback system were used as primary qualitative data.
- ⇒ A combination of the Healthcare Complaints Analysis Tool, text network analysis and latent Dirichlet allocation was used for structured feedback categorisation.
- ⇒ Rigorous data cleaning, high inter-rater reliability and expert consensus were employed to ensure validity.
- ⇒ The single-institution design at a newly established hospital may limit the generalisability of the findings, although the methodological framework is transferable to other settings.

INTRODUCTION

Enhancing the quality of medical services and ensuring patient safety are fundamental objectives of contemporary healthcare systems to foster a sustainable and efficient healthcare environment.^{1 2} Evaluating patient experiences is pivotal for achieving these goals because such experiences can serve as critical indicators of healthcare quality and offer in-depth insights into the strengths and weaknesses of healthcare institutions.^{3 4} Conventional satisfaction surveys often provide aggregated scores; however, patient experiences offer more nuanced narrative insights that highlight specific areas requiring systemic improvements. Traditionally, research has focused on patient problems and negative feedback to identify inadequacies in healthcare services and develop improvement strategies.^{5–8} While addressing negative feedback is essential, this emphasis has led to the relative underutilisation of positive feedback from patients, particularly in the form of compliment letters. Consequently, researchers have had limited insight into what patients truly value, making it difficult to leverage the positive aspects for meaningful quality enhancements. Patient-initiated



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compliment letters offer unique, emotionally resonant narratives that illuminate the aspects of care that patients find outstanding.^{9 10} These letters often convey gratitude, relief and trust—emotions that can significantly influence patients' overall sense of well-being and engagement in their own care. By focusing on this positive dimension, healthcare providers can gain deeper insights into the relational and communicative factors that may be under-represented in problem-driven analyses.¹¹ Despite their potential benefits, systematic analyses of patient compliment letters remain scarce, creating a missed opportunity to fully understand and build on the factors that enhance positive patient experiences. Accordingly, the present study aimed to analyse patient-initiated compliment letters from a newly established general hospital in South Korea to identify the elements that patients value the most. By concentrating on genuine expressions of gratitude and praise, this study identifies the key drivers of patient-centred care and offers clear pathways for organisational and professional development.

METHODS

Data collection

In total, 1213 patient compliment letters were collected from a newly established general hospital in Gwangmyeong, South Korea (opened on 22 March 2022), through the hospital's feedback system during its initial operational phase from 25 March 2022 to 28 June 2024. The 'Voice of the Customer' feedback system is accessible through the hospital's official website and offers both online and on-site submission methods for patient feedback, including compliments and problems. Although no systematic campaign was conducted to promote the feedback system, information about it was publicly available on the hospital's website and routinely communicated to patients as part of the discharge guidance process. No incentives were provided to patients for submitting compliment letters, nor were incentives offered to staff for receiving them; when compliments were received, the relevant department was notified of the positive feedback.

We selected compliment letters that explicitly expressed gratitude or positive feedback regarding the hospital's services, staff or environment, ensuring that the content reflected genuine patient experiences rather than administrative inquiries. These letters provided a rich, narrative account of patient experiences during the hospital's formative period, offering valuable insights into the institutional strengths and specific healthcare service attributes that were the most highly valued by patients.

After data collection, a systematic data cleaning process was implemented to ensure data quality. All letters were digitised and reviewed for typographical errors using spell-check features and manual inspection. Duplicate submissions were identified and removed based on matching content and submission metadata, resulting in a robust dataset. Detailed preprocessing procedures, including synonym standardisation and development

of exclusion word lists, are described below in the Data preprocessing section.

Inter-rater reliability

To ensure methodological rigour and robust classification, Gwet's AC1 statistic was used to assess inter-rater reliability. This statistic accounts for chance agreement and is considered suitable for categorical data.^{12 13} Two trained evaluators thoroughly familiar with the Healthcare Complaints Analysis Tool (HCAT) coding criteria independently coded a randomly selected 10% subset of the compliment letters. This process provided a systematic measure of classification consistency before proceeding with the full dataset analysis.

HCAT classification and Pearson residual analysis

To ensure systematic and reproducible categorisation, the HCAT was applied to all patient compliment letters. Compliments were initially grouped into three overarching domains, namely, clinical, management and relationship, based on the established HCAT criteria. Each compliment was then mapped to one of the following six predefined service stages: (1) admission, (2) examination/diagnosis, (3) care in the ward, (4) operation/procedure, (5) discharge or (6) unspecified/unclear.^{7 14 15} All classification guidelines, including coding criteria and examples, are provided in online supplemental file 1 for transparency and replicability.

Following classification, Pearson residual analysis was performed to evaluate whether the observed frequencies of compliments across domains and stages differed significantly from expected distributions.¹⁶ Residuals exceeding ± 2.0 were interpreted as significant deviations from expected frequencies.¹⁷ This analytical step provided a rigorous, quantitative assessment of patterns in patient feedback, contributing to a more robust understanding of the factors influencing positive patient experiences.

Data preprocessing

Data preprocessing involved cleaning and organising the content of the compliment letters. Letters were digitised using Microsoft Excel 2021 (V.16.0.14334.20468; Microsoft, Redmond, Washington, USA), and typographical errors were corrected using spell-check features and manual review. A text network analysis was performed using NetMiner V.4.5.1.c (CYRAM, Seongnam, South Korea); pronouns and adverbs were automatically removed to extract nouns. Comprehensive lists of defined words, synonym words and exclusion words were developed to accurately identify relevant keywords.¹⁸ Defined words, such as 'injection room' and 'caesarean section' were preserved to maintain their contextual meaning. Synonyms such as 'Mr./Ms.' ('Mr. or Ms.' is translated as '*seonsaengnim*', a respectful title used to address medical professionals, such as doctors and nurses. This term signifies the high regard and acknowledgement of the expertise and compassionate care provided by healthcare staff), 'medical staff' and 'healthcare professionals' were

standardised to ‘Mr./Ms.’ to ensure consistency across the dataset. Common or semantically insignificant words such as ‘and’, ‘or’, ‘but’, ‘however’ and ‘because’ were excluded. This refinement process was collaboratively conducted by three faculty members specialising in emergency medicine (MN and CWK) and medical education (MKK). The final selections were validated by the entire research team.

Keyword extraction and network structure

Keyword extraction was conducted using the term frequency–inverse document frequency (TF–IDF) method, a well-established technique for identifying terms that are frequent within a given set of documents but comparatively rare across the entire corpus.^{19 20} Terms with higher TF–IDF values were considered more contextually significant.

Following keyword extraction, text network analysis was performed to uncover association patterns between key terms. The initial bipartite word–document structure was transformed into a unipartite word–word network, in which the edges represented the co-occurrence of terms. To enhance the analytical relevance and reduce noise, a minimum co-occurrence threshold of two and a maximum word distance of two were applied.²¹ This approach helped to isolate meaningful connections and provided a clearer view of how concepts were interrelated within the patient compliment letters.

Topic modelling

Latent Dirichlet allocation (LDA) was used to extract key themes representing the core topics within the corpus of compliment letters.^{18 22 23} Various parameter combinations were tested to determine the optimal number of topics, including alpha values of 0.01–0.05, beta values of 0.01–0.05, topic numbers of 2–10 and 1000 iterations. The model with the highest coherence score (u_{mass}) was selected to ensure validity and reliability.²⁴ Subsequently, the research team assigned descriptive labels to the topics, reflecting the thematic trends identified in the data. To enhance the robustness of the analysis, three researchers (YGK, DJ and CWK) independently reviewed and reached a consensus on the identified themes and topics. Finally, a topic model visualisation was created to display the leading keywords and their interconnections, illustrating the main topics within the text data.

Patient and public involvement

This study involved a retrospective secondary analysis of patient compliment letters collected through the hospital’s feedback system. The patients and the public were not directly involved in the design, conduct or reporting of the study. As this study analysed de-identified pre-existing data, no patient recruitment or direct engagement was required. There are no plans to disseminate the results directly to the patients who submitted the original compliment letters.

Table 1 Descriptive statistics

HCAT		N (%)
Total number of compliment letters		1213
Total number of compliment categories		1518
Clinical	Quality	80 (5)
	Safety	15 (1)
	Extra clinical	132 (9)
	Vague clinical	303 (20)
Management	Environment	33 (2)
	Institutional process	10 (1)
	Vague management	1 (0)
Relationship	Listening	58 (4)
	Communication	247 (16)
	Respect and patient rights	12 (1)
	Extra relationship	103 (7)
	Vague relationship	524 (35)
Stage of care	(1) Admission	8 (1)
	(2) Examination/diagnosis	496 (33)
	(3) Care in the ward	850 (56)
	(4) Operation/procedure	99 (7)
	(5) Discharge	17 (1)
	(6) Unspecified/unclear	48 (3)

HCAT, Healthcare Complaints Analysis Tool.

RESULTS

Descriptive statistics

In total, 1213 patient compliment letters yielded 1518 categorised compliments (table 1). The ‘relationship’ domain comprised the majority with 944 categories (62%), followed by ‘clinical’ with 530 categories (35%) and ‘management’ with 44 categories (3%). Within the ‘relationship’ domain, ‘vague relationship’ accounted for 524 categories (35%) and ‘communication’ for 247 (16%). In the ‘clinical’ domain, ‘vague clinical’ was the most frequent (303 categories, 20%), and ‘extra clinical’ followed with 132 (9%). For the ‘management’ domain, ‘environment’ comprised 33 categories (2%). Regarding the stage of care, most compliments were associated with care in the ward (850, 56%) and examination/diagnosis (496, 33%), with fewer mentions of admission (8, 1%) and discharge (17, 1%).

Inter-rater reliability

The inter-rater reliability of the HCAT classification was measured using the ACI coefficient, which yielded a high level of agreement at 0.91 (95% CI 0.81 to 1.00, p<0.001).

Pearson residual analysis

The Pearson residual analysis (table 2) showed the highest positive values during the care in the ward stage (Stage 3), particularly for ‘vague relationship’ (22.3), ‘vague clinical’ (18.2) and ‘communication’ (14.3). Negative values were prominent at admission (Stage 1) and discharge (Stage 5), especially for ‘vague relationship’ (–9.1) and

Table 2 Pearson residual analysis between service stage and HCAT domain

Domain	Subdomain	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Clinical	Quality	-3.6	2.9	2.9	5.1	-3.6	-3.6
	Safety	-1.5	2.2	3.4	-0.9	-1.5	-1.5
	Extra clinical	-4.6	1.0	11.7	1.2	-4.6	-4.6
	Vague clinical	-7.0	7.1	18.2	-4.8	-7.0	-6.3
Management	Environment	-2.3	-1.4	9.1	-2.3	-2.3	-0.6
	Institutional process	0.2	1.0	0.2	-1.2	-0.5	0.2
	Vague management	-0.4	-0.4	2.0	-0.4	-0.4	-0.4
Relationship	Listening	-2.4	3.6	6.5	-3.1	-2.1	-2.4
	Communication	-6.4	9.3	14.3	-5.2	-5.9	-6.1
	Respect and patient rights	-0.7	0	3.5	-1.4	-1.4	0
	Extra relationship	-3.9	2.9	11.5	-3.4	-3.7	-3.4
	Vague relationship	-9.1	9.9	22.3	-8.3	-8.5	-6.3

HCAT, Healthcare Complaints Analysis Tool.

‘vague clinical’ (-7.0). Examination/diagnosis (Stage 2) exhibited positive residuals for ‘vague relationship’ (9.9) and ‘communication’ (9.3).

Keyword analysis

Among the 1213 compliment letters, the TF analysis (table 3) identified ‘gratitude’ (1645), ‘Mr./Ms.’ (1068), ‘doctor’ (1053), ‘nurse’ (1008) and ‘kindness’ (918) as the most frequently appearing words. TF-IDF analysis,

Table 3 The 20 most frequently appearing keywords in the TF and TF-IDF analyses

Rank	TF		TF-IDF	
	Keywords	Frequency	Keywords	TF-IDF
1	Gratitude	1645	Heart/mind	320
2	Mr or Ms	1068	Admission	318
3	Doctor	1053	Words	283
4	Nurse	1008	Surgery	251
5	Kindness	918	Treatment	244
6	Patient	879	Consultation	215
7	Hospital	749	Gwangmyeong	200
8	Surgery	589	Ward	193
9	Compliment	483	Demeanour	188
10	Admission	462	Warmth	177
11	Heart/mind	447	Thought	162
12	Explanation	438	Discharge	154
13	Words	417	Health	154
14	Treatment	398	Touched	148
15	Consultation	373	First time	143
16	Ward	292	Worry	141
17	Gwangmyeong	248	Examination	131
18	Examination	245	Sincerity	130
19	Warmth	234	Caregiver	124
20	Demeanour	231	Comfortable	123

TF, term frequency; TF-IDF, term frequency-inverse document frequency.

which accounts for how uniquely words appear across the dataset, highlighted ‘heart/mind’ (320), ‘admission’ (318), ‘words’ (283), ‘surgery’ (251) and ‘treatment’ (244) as having the highest relative importance.

Topic modelling

LDA was performed with $\alpha=0.03$ and $\beta=0.03$, yielding a coherence (u_{mass}) score of -0.761. Three primary topics were identified (figure 1). After confirming the coherence of the model, the research team examined the keywords and their original contexts, reaching a consensus on suitable topic labels.

Topic 1, which accounted for 39% of all topics, included keywords such as ‘nurse’, ‘gratitude’, ‘kindness’ and ‘hospital’. This topic captured patients’ positive responses to the nurturing environment and compassionate attention provided by nurses and other healthcare staff members. As this topic reflected patients’ appreciation of holistic nursing care, it was named ‘appreciation of nursing care’.

Topic 2, representing 35% of all topics, featured terms such as ‘doctor’, ‘surgery’, ‘treatment’ and ‘patient’. Some keywords overlapped with other topics; however, the focus was on the perception of professional expertise and empathetic treatment during surgical procedures and overall medical interventions. Accordingly, this topic was labelled ‘professionalism in surgery and treatment’.

Topic 3, comprising 26% of all topics, highlighted words including ‘kindness’, ‘consultation’, ‘examination’ and ‘explanation’. These terms emphasised the importance of clear, considerate communication and supportive interactions between patients and healthcare professionals. Given its focus on meaningful, dialogue-based engagement, this topic was named ‘effective communication during consultations’.

DISCUSSION

Principal findings

This study comprehensively analysed patient-initiated compliment letters to assess healthcare service quality

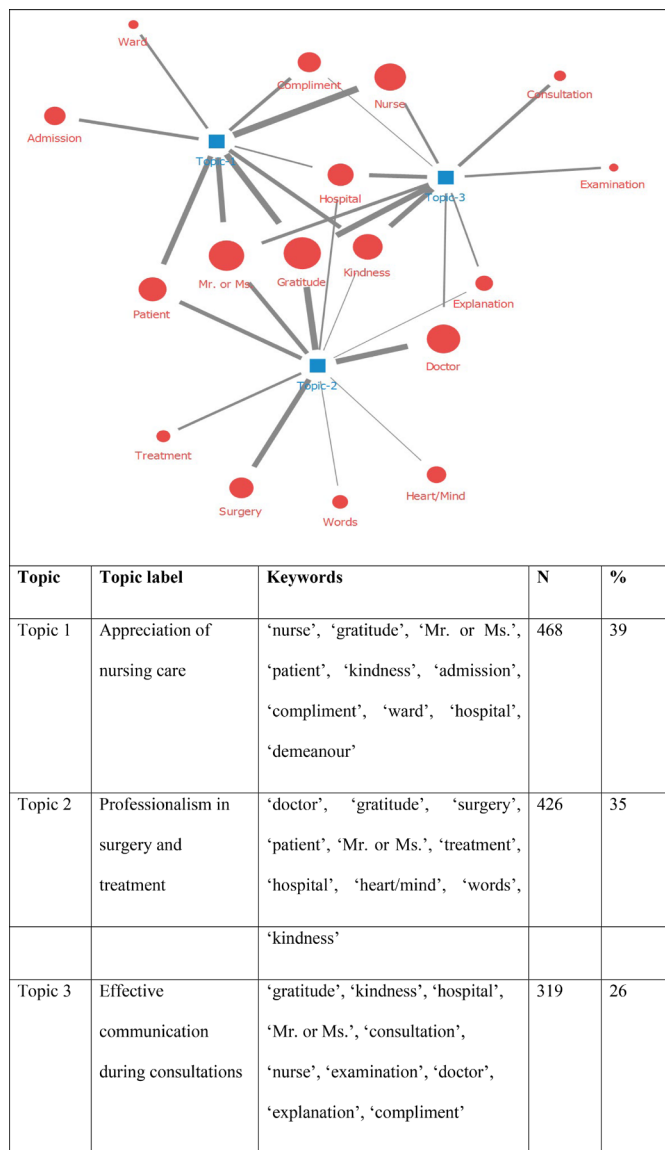


Figure 1 Semantic keywords of topic modelling.

and identify institutional strengths. The results revealed that the 'relationship' domain garnered the highest number of compliments (63%), underscoring the pivotal role of positive interactions between medical staff and patients in enhancing patient satisfaction. Compliments were concentrated during care in the ward stage (56%), highlighting the importance of continuous care and meaningful interactions during hospitalisation. Keyword analysis identified the terms 'gratitude', 'kindness', 'nurse', 'doctor' and 'heart/mind' as the most frequently occurring words, underscoring patients' high valuation of emotional support, professional competence and compassionate communication with medical staff. Furthermore, topic modelling revealed three primary themes, as follows: 'appreciation of nursing care' (39%), 'professionalism in surgery and treatment' (35%) and 'effective communication during consultations' (26%). These themes demonstrate that patients value kindness and attentive care from nurses and medical staff, along

with professional, considerate attitudes during surgical procedures. Clear, compassionate communication during consultations and examinations also plays a crucial role in patient satisfaction.

Strengths and limitations

A key strength of this study is the utilisation of genuine patient-initiated feedback, which enabled a comprehensive analysis of the positive aspects of healthcare services. This approach captured authentic patient opinions, offering a more accurate evaluation of healthcare quality than conventional satisfaction surveys. Additionally, the integration of the HCAT with text network analysis and LDA topic modelling provided a robust combination of quantitative and qualitative analyses, enhancing data reliability and validity. The high inter-rater reliability further strengthened the consistency and credibility of the classification process, while the collaborative refinement involving experts in emergency medicine and medical education ensured accurate and nuanced categorisation.

This study has some limitations that warrant consideration. First, the data were sourced from a single, newly established institution in South Korea. As a newly opened hospital, patient expectations and staff behaviours during its formative period may differ from those observed in more established institutions, where organisational culture and service patterns have stabilised over time. The cultural context of South Korea, where polite expressions of gratitude and respect are strongly emphasised, may have also influenced the content and tone of the compliment letters, and different cultural or regional settings could yield varied patterns of positive feedback. Consequently, caution is warranted when generalising these findings to other healthcare environments. However, while the specific findings may be context dependent, the methodological framework employed in this study offers a transferable and replicable approach that can be adapted to analyse patient feedback across diverse settings.

Second, although the hospital's feedback system accepted both online and on-site submissions, this study relied exclusively on compliment letters collected through these formal channels and did not capture other forms of positive feedback, such as informal verbal praise or external online reviews. While the availability of on-site submissions may have partially mitigated barriers related to digital access, the proportion of submissions received through each channel was not tracked and patients who were unaware of either submission method may still have been under-represented. Furthermore, because no systematic awareness campaign was conducted to promote the feedback system, not all patients may have been equally informed about the opportunity to submit compliments, potentially introducing unintentional selection effects. The voluntary nature of submission may also have led to selection bias, as patients with neutral or negative experiences are less inclined to submit compliments.⁹ Nevertheless, the absence of incentives for submission reduced

the likelihood of externally motivated responses, thereby supporting the authenticity of the collected data.

Third, although the compliment letters contained information identifying specific departments or specialties, a department-level analysis was not conducted. The primary aim of this research was to identify the universal elements of care that patients value across the institution, rather than to compare the performances of individual departments. Department-level analysis, while potentially useful for internal quality improvement, was considered beyond the scope of this study because it could shift the focus from understanding broadly valued care attributes to institutional performance benchmarking. Future multicentre studies encompassing various institutional types, cultural contexts and healthcare systems, as well as department-specific analyses, would be valuable for validating and extending these findings.

Interpretation within the context of the wider literature

The emphasis on the 'relationship' domain aligns with existing literature that highlights the significance of patient-provider rapport in healthcare satisfaction.^{9 25} Furthermore, when healthcare professionals communicate clearly and demonstrate empathy, patients not only report improved experiences but also exhibit more favourable clinical outcomes.²⁶ While traditional patient satisfaction surveys yield useful quantitative metrics, the narrative nature of compliment letters provides detailed insights into specific aspects of care that resonate with patients. In this study, the concentration of compliments during the care in the ward stage mirrors previous findings showing that inpatient experiences shape the overall perceptions of care quality.²⁷ While prior research has focused on patient problems to identify service deficiencies,^{7 9-11 14 15} the present analysis highlights the distinct value of positive feedback in uncovering what patients truly appreciate. These findings suggest that compliment letters can complement conventional survey data, offering actionable insights for establishing quality improvement initiatives through reinforcing successful practices.⁹

Implications for policy, practice and research

The findings presented here have significant implications for policy, practice and future research. For example, healthcare institutions may develop structured feedback loops in which recurring themes from compliment letters, such as empathetic communication or efficient ward care, are presented in regular staff briefings. The direct incorporation of positive patient narratives could serve as a catalyst for continuous improvement, guiding staff training modules, peer mentoring programmes and performance evaluations. Additionally, administrators can introduce recognition platforms that highlight exemplary acts of kindness or professionalism, thereby reinforcing a culture of excellence.²⁸

Training programmes should be developed to strengthen the relational competencies of healthcare professionals by focusing on skills such as active listening,

compassionate care and clear communication. These skills are crucial for improving the patient experience, particularly during the care in the ward stage.^{29 30} Moreover, continuous professional development initiatives should be implemented to ensure that healthcare professionals maintain and enhance their clinical expertise and remain informed regarding the latest medical advancements.³¹ Ongoing education is essential for delivering high-quality, evidence-based care that aligns with evolving patient needs.

Integrating patient feedback into continuous quality improvement initiatives can help tailor services to better meet patient needs.³² Establishing systematic methods for collecting and analysing patient feedback, including positive feedback, such as compliment letters, is essential for ongoing service enhancement.³³ Future research should investigate the effects of positive patient experiences on clinical outcomes and explore how these insights can be effectively integrated into healthcare training and practice. Expanding the studies across diverse healthcare settings and populations will help validate these findings and contribute to a more comprehensive understanding of the factors influencing patient satisfaction.

CONCLUSION

This study underscores the critical importance of positive relationships with medical staff, particularly kindness, professionalism and effective communication, in driving patient satisfaction. Patient compliment letters are valuable indicators of exceptional care and provide actionable insights for establishing quality improvement initiatives. By leveraging these positive feedback mechanisms, healthcare institutions can identify their strengths and implement strategies to enhance patient-centred services, foster a culture of excellence and improve the overall quality of healthcare delivery.

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Patient consent for publication Not applicable.

Ethics approval The Institutional Review Board (IRB) of Chung-Ang University reviewed the data, originally approved by the IRB of Chung-Ang University Gwangmyeong Hospital (Approval Number: 1041078–20240817 HR-219) and determined that this study qualified for exemption from a full review. This exemption was granted because the study involved a secondary analysis of existing data, posing minimal risk to the participants. All procedures complied with ethical guidelines and regulations, including those outlined in the Declaration of Helsinki.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. The datasets generated and/or analysed during the current study are not publicly available owing to ethical constraints but are available from the corresponding author upon reasonable request.

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