KEMAS 20 (3) (2025) 544-556

Jurnal Kesehatan Masyarakat

http://journal.unnes.ac.id/nju/index.php/kemas

The Key to Successful Care Coordination and Patient-Centeredness in Cardiac Surgery

Hari Hendriarti Satoto[1,2]✉,Ferdi Antonio[2], Annisa Zakia Widiastuti[1]
[1]Department of Cardiovascular Medicine, Faculty of Medicine Universitas Diponegoro – RS Kariadi Jl. Dr. Soetomo No. 16, Randusari, Kec. Semarang Selatan, Semarang 50244, Indonesia
[2]Department of Hospital Administration, Graduate School of Management, Universitas Pelita Harapan, Jl. Garnisun Dalam No. 8, Kec. Setiabudi, Jakarta Selatan 12930, Indonesia

Article Info

Article History:
Submitted November 2024
Accepted January 2025
Published January 2025

Keywords:
importance-performance map analysis; care coordination for cardiac surgery; patient centricity; individual behaviour aspect; interpersonal relation aspect

DOI
https://doi.org/10.15294/kemas.v20i3.16393

Abstract

In the healthcare sector, delivering patient-centered care is vital for enhancing results and ensuring favorable experiences for individuals. Coordinating care contributes critically in attaining patient-centricity by enabling smooth and efficient interaction and partnership among healthcare professionals, patients, and their families. Efficient care coordination advances patient-centered care by guaranteeing that all aspects of a patient's medical journey are interconnected and tailored to their specific requirements. This connectivity and personalization can be accomplished through various approaches such as evidence-based practice, electronic medical records utilization, promotion of patient safety, cross-functional teamwork, mutual communication, goal alignment, and shared accountability. Achieving efficient care coordination for cardiac surgery involves assembling a varied team that collaborates to develop personalized treatment plans for every patient. This approach ensures the smooth coordination of all elements of patient care, including pre-operative assessments, surgical procedures, and post-surgery rehabilitation plans. Prioritizing the significance of coordinated care in hospital administration can assist policymakers and healthcare systems in striving to deliver tailored, patient-focused care that contributes to enhanced health results for individuals. Through communication and teamwork enhancement, distributing tasks equitably, and advancing evidence-based practices among medical professionals, the overall coordination of care in cardiac surgery can be notably enhanced resulting in improved personalized patient care and ultimately better health outcomes.

Introduction

Cardiovascular disease (CVD) remains a contributing cause of death and morbidity in Indonesia, and CVD death has increased substantially and remained increased in the last ten years (Harmadha *et al.*, 2023). The total annual healthcare costs per person with coronary heart disease from the Indonesian Case Base Group data in 2018 were estimated to be US$5,720 (IDR 81,620,376) (Uli *et al.*, 2020). Around 1 to 1.5 million heart surgeries are conducted every year in countries with lower to middle incomes, or 55.1 per 100,000 of the population. Not to mention the expensive cost, which can range from tens to hundreds of thousands of dollars per heart surgery (Dominique *et al.*, 2023; World Health Organization, 2023).

Teaching hospitals have a role in developing high-quality cardiovascular care. One of the defining features of teaching hospitals is their integration of clinical, research, and educational missions within the academic health center framework. The educational component of teaching hospitals is also crucial in shaping the future of healthcare delivery, facilitating the cultivation of a healthcare workplace which highly proficient, empathetic, and dedicated to providing patient-centric care. The teaching hospitals facilitate the cultivation

✉ Correspondence Address:
Department of Cardiovascular Medicine, Faculty of Medicine Universitas Diponegoro – RS Kariadi
Email: putrisatoto@gmail.com

pISSN 1858-1196
eISSN 2355-3596

of a healthcare workforce that is highly skilled and dedicated to continuous professional development through the provision of extensive practical training opportunities for medical students, residents, and fellows (Sadeghi *et al.*, 2022; Burke *et al.*, 2017). Although teaching hospitals seem to have perfect medical services, the complex nature of teaching hospitals can contribute to patient complaints about the health services they provide. Patients often receive an overwhelming amount of information at once from different medical or non-medical staff, and the information given can be inconsistent, leading to confusion and complaints.

Care coordination plays an important role in ensuring patient-centricity in cardiac surgery. The complex nature of cardiac surgery demands excellent collaboration and coordination among various healthcare professionals to ensure optimal patient outcomes. Healthcare providers can elevate the quality of patient-centered cardiovascular care and ultimately improve outcomes and satisfaction levels for individuals undergoing cardiac procedures by prioritizing care coordination (Khanna *et al.*, 2022).. Efficient coordination of care in cardiac surgery starts with bringing together a varied team that works together to create customized treatment plans for each patient. This method guarantees the smooth integration of all facets of patient care, such as pre-surgery assessments, surgical procedures, and post-operative recovery strategies (Geiger *et al.*, 2021). Coordinating these various stages of care is crucial for delivering thorough and patient-focused treatment.

Assembling a collaborative team and the usage of electronic health records are both essential for enhancing communication and information sharing among the specialists involved in cardiac surgery. Electronic medical record platforms enable immediate access to critical patient data, including medical test results, medication histories, and surgical reports (Abdekhoda *et al.*, 2019). It facilitates well-informed decision-making and promotes consistent delivery of healthcare services. Cultivating a culture emphasizing shared responsibility and patient safety is essential for providing cohesive and secure patient-centered care in cardiac surgery. Each healthcare team member plays a vital role in delivering high-quality patient care, and ensuring effective communication and aligned objectives are crucial for delivering comprehensive and safe patient-centered treatment. Collaborative responsibility among healthcare providers fosters a team-based approach to patient care, resulting in enhanced coordination and seamless transitions between various phases of cardiac surgery (Prakash & Srivastava, 2021; Rosen *et al.*, 2018). This environment promotes accountability among team members for achieving shared goals, ultimately enhancing patient care quality and safety.

Emphasizing evidence-based practice is crucial for coordinating care in cardiac surgery. Healthcare providers should utilize the most up-to-date and reliable evidence to guide their decision-making and practices, ensuring patients receive the most effective and appropriate care. By implementing care coordination, healthcare professionals and policymakers can collaborate to establish uniform guidelines and protocols informed by current research and proven strategies (Prakash & Srivastava, 2021; Rosen *et al.*, 2018). This approach encourages the implementation of evidence-based practices and promotes consistency as the objective among healthcare stakeholders. All this approach can substantially enhance the overall effectiveness of care coordination in cardiac surgery, leading to improved health outcomes for individuals and fostering a patient-centric approach to healthcare delivery. The conceptual research framework shows how care coordination acts as a mediator in the individual behaviour aspect and interpersonal relation aspect of patient centricity, depicted in **"Figure 1."** Structural equation modeling is employed to examine and analyze the connections between theoretical concepts, testing earlier hypotheses about correlations and covariance of latent variables (Sarstedt *et al.*, 2022).

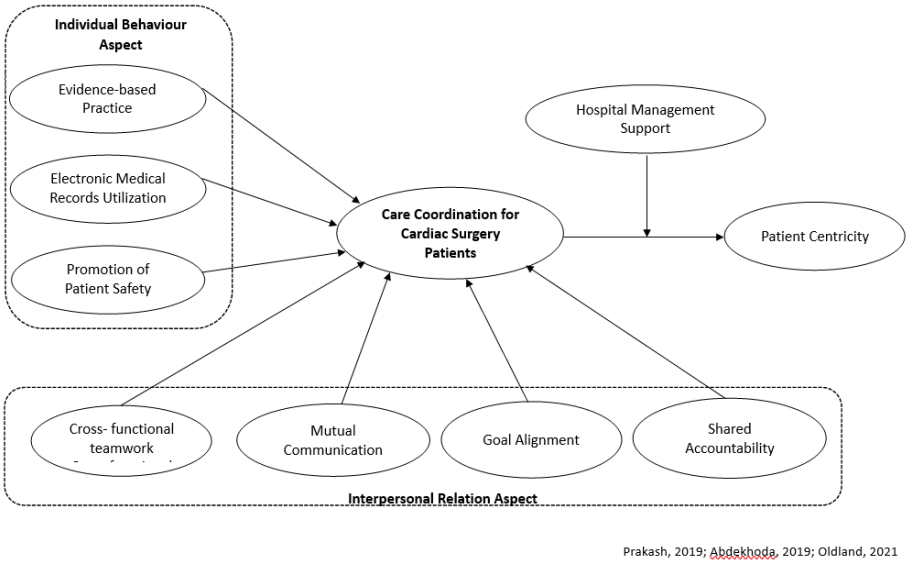

Figure 1. Conceptual Research Framework

Table 1. Construct Definition

Variables	Definition	References
Evidence-Based Practice	Evidence-based practice in healthcare during cardiac surgery care; based on client's preference and clinical condition; assessed by healthcare professional	Oldland *et al.*, 2020
Electronic Medical Records Utilization	Electronic medical records usage in healthcare services daily	Abdekhoda *et al.*, 2019
Promotion of Patient Safety	Hospital efforts to provide care with greater attention to patient safety	Oldland *et al.*, 2020; Carini *et al.*, 2020
Cross-Functional Teamwork	Cross-functional teamwork is collaboration and cooperation between individuals from various functional areas or scientific disciplines in an organization, in this context the cardiac surgery team	Prakash & Srivastava, 2021; Rosen *et al.*, 2018
Mutual Communication	Mutual communication is the dynamic exchange of information, ideas, and perspectives among healthcare professionals involved in patient care	Prakash & Srivastava, 2021; Rosen *et al.*, 2018
Goal Alignment	Goal alignment is the process of ensuring that the goals and objectives of individual healthcare providers, teams, and organizations are aligned with each other and ultimately support the mission and vision of the healthcare facility as a whole system	Prakash & Srivastava, 2021; Rosen *et al.*, 2018
Shared Accountability	Shared accountability is a collective commitment among healthcare professionals to take responsibility for patient care outcomes.	Prakash & Srivastava, 2021; Rosen *et al.*, 2018
Care Coordination for Cardiac Surgery Patients	The deliberate organization of patient cardiac surgery care activities between two or more participants (including the patient) involved in a patient's care to facilitate the appropriate delivery of health care services.	Schultz & McDonald, 2017; Prakash & Srivastava, 2021

Patient Centricity	Patient centricity is a dimension of hospital performance in which the hospital places patients at the center of care and services by paying attention to needs, expectations, autonomy, access to the hospital network, communication, confidentiality, dignity, choice, desire for appropriate care for patients and his family	Arah *et al.*, 2003; Carini *et al.*, 2020;
Hospital Management Support	Hospital management support to achieve patient centered-care	Abdekhoda *et al.*, 2019

Method

This cross-sectional study adopted the total sample method. The study was conducted in the Cardiovascular Department at a teaching hospital in Indonesia. The protocol was reviewed and approved by The Research Committee Ethic (KEP FEB) Faculty Economic and Business Universitas Pelita Harapan No. 005/M/EC-Mrt/III/2024. In this study, a total of 204 medical staff who joined the cardiac surgery team were recruited and completed structured questionnaires. The questionnaire was distributed for ten days via Google Form link to the participants without asking for personal data such as name, telephone number, email address, or others to ensure participants were able to answer anonymously. It is also stated in the questionnaire introduction that the questionnaire can be filled in voluntarily and anonymously. The inclusion criteria are as follows: willingness to fill out the questionnaire form, age 18 – 65 years old, join the cardiac surgery team for more than three months.

The study utilized the questionnaire, consisting of 43 questions consisting of three variables for the individual behaviour aspect (evidence-based practice, electronic medical records utilization, promotion of patient safety), four variables for the interpersonal relation aspect (cross-functional teamwork, mutual communication, goal alignment, shared accountability), care coordination for cardiac surgery patients, patient centricity, and hospital management support. There were six experts, including four academics and two hospital practitioners, who assessed the questionnaire content validity by rating the alignment of items on a Likert scale from 1 as strongly disagree to 5 as strongly agree. They also evaluated the significance and clarity of the translated inquiries for each item. The feedback from these experts improved the validation process and helped refine the translations.

The analysis utilized SmartPLS® 4.0 software, known for its advanced analytical capabilities. This approach yields two main types of results: the outer model (measurement model) and the Importance-Performance Map Analysis. The outer model evaluates the relationship between indicators and their variables to establish reliability and validity through measures such as indicator reliability (outer loading), construct reliability, convergent validity (average variance extracted/AVE), and discriminant validity within this research framework. Following this, IPMA evaluates both the importance and performance of the targeted construct to provide detailed managerial recommendations based on average or mean values obtained from respondents' responses. IPMA classifies indicators into four quadrants representing distinct strategies: quadrant A with high importance/low performance as the top priority; quadrant B with high importance/high performance to be maintained; quadrant C with low importance/low performance as a low priority; and Quadrant D with low importance/high performance.

Result And Discussion

The initial stage of the PLS-SEM analysis assesses the outer loading of the reflective model as an indicator of reliability. All indicators should exhibit outer loading values above 0.708 to ascertain their reliability. There are 43 indicators, with 1 indicator outer loading value < 0.708 but the AVE values > 0.5, so the indicator was not eliminated in this

Table 2. Demographic Data of Participants

Baseline characteristics	n = 260	%
Age		
18 - 30 y.o	32	15.6
31 - 50 y.o	161	79
51 - 65 y.o	11	5.4
Profession		
Specialist doctor	34	16.7
Resident	86	42.1
Bachelor/Higher Degree Nurse	43	21.1
Diploma Nurse	25	12.3
Other	16	7.8
Length of Employment		
1 - 3 tahun	111	54.4
> 3 tahun	93	45.6

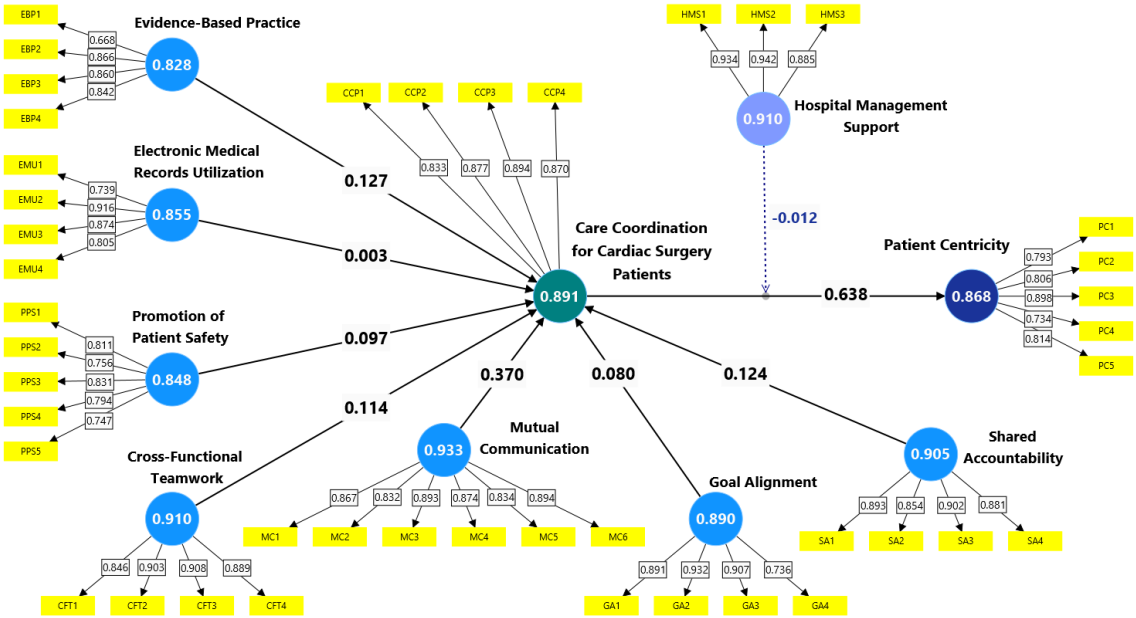

Figure 2. First Stage Outer Model Analysis

study. This study examined 26 indicators with outer loading values exceeding 0.708, along with one indicator below this threshold but still above 0.40, all meeting the required criteria for reliability and validity assessment. In the second step of the analysis, internal consistency was tested; constructs were regarded as reliable if they demonstrated a Cronbach's alpha greater than 0.7 and composite reliability within a range from [0.7–95]. The third step involved measuring AVE to evaluate convergent validity - refer to "Table 3." for details on these results.

This study established that all constructs had an AVE ≥ 0.5 to satisfy literature requirements by explaining at least half (50%) of item variance in the model, thus achieving convergent validity. The result of the reliability and validity test of the conceptual research framework is described in "Table 2." and "Figure 1." All 43 indicators within the analysis have met the requirement for indicator reliability, construct reliability, and convergent validity. In the discriminant test using this method, the heterotrait value (an indicator with its own

Table 2. Reliability and Validity Test

Variables	Indicators	Outer loading	Cronbach's Alpha	Composite reliability (rho_α)	Composite reliability (rho_c)	Average Variance Extracted (AVE)
Evidence-Based Practice	EBP1	0.668	0.828	0.860	0.885	0.661
	EBP2	0.866				
	EBP3	0.860				
	EBP4	0.842				
Electronic Medical Records Utilization	EMU1	0.739	0.855	0.873	0.903	0.700
	EMU2	0.916				
	EMU3	0.874				
	EMU4	0.805				
Promotion of Patient Safety	PPS1	0.811	0.848	0.851	0.891	0.622
	PPS2	0.756				
	PPS3	0.831				
	PPS4	0.794				
	PPS5	0.747				
Cross-Functional Teamwork	CFT1	0.846	0.910	0.914	0.937	0.787
	CFT2	0.903				
	CFT3	0.908				
	CFT4	0.889				
Mutual Communication	MC1	0.867	0.933	0.934	0.947	0.750
	MC2	0.832				
	MC3	0.893				
	MC4	0.874				
	MC5	0.834				
	MC6	0.894				
Goal Alignment	GA1	0.891	0.890	0.907	0.925	0.756
	GA2	0.932				
	GA3	0.907				
	GA4	0.736				
Shared Accountability	SA1	0.893	0.868	0.908	0.934	0.779
	SA2	0.854				
	SA3	0.902				
	SA4	0.881				
Care Coordination for Cardiac Surgery Patients	CCP1	0.833	0.891	0.892	0.925	0.754
	CCP2	0.877				
	CCP3	0.894				
	CCP4	0.870				

Patient Centricity	PC1	0.793	0.868	0.878	0.905	0.657
	PC2	0.806				
	PC3	0.898				
	PC4	0.734				
	PC5	0.814				
Hospital Management Support	HMS1	0.934	0.910	0.915	0.943	0.847
	HMS2	0.942				
	HMS3	0.885				

Notes: Abbreviation: Care Coordination for Cardiac Surgery Patients (CCP), Cross-Functional Teamwork (CFT), Electronic Medical Records Utilization (EMU), Evidence-Based Practice (EBP), Goal Alignment (GA), Hospital Management Support (HMS), Mutual Communication (MC), Patient Centricity (PC), Promotion of Patient Safety (PPS), Shared Accountability (SA).

Table 3. Discriminant Validity HT/MT Ratio

Variables	CCP	CFT	EMU	EBP	GA	HMS	MC	PC	PPS
CCP									
CFT	0.765 CI (0.702-0.826)								
EMU	0.565 CI (0.450-0.668)	0.50 CI (0.392-0.614)							
EBP	0.745 CI (0.655-0.828)	0.664 CI (0.575-0.748)	0.649 CI (0.539-0.754)						
GA	0.820 CI (0.750-0.885)	0.873 CI (0.817-0.926)	0.634 CI (0.541-0.718)	0.726 CI (0.629-0.815)					
HMS	0.672 CI (0.589-0.753)	0.749 CI (0.663-0.829)	0.534 CI (0.419-0.648)	0.648 CI (0.541-0.755)	0.726 CI (0.715-0.871)				
MC	0.865 CI (0.806-0.917)	0.838 CI (0.778-0.891)	0.606 CI (0.496-0.703)	0.777 CI (0.699-0.850)	0.929 CI (0.884-0.970)	0.770 CI (0.687-0.844)			
PC	0.865 CI (0.817-0.911)	0.695 CI	0.529 CI (0.413-0.642)	0.683 CI (0.586-0.772)	0.785 CI (0.712-0.855)	0.663 CI (0.565-0.753)	0.801 CI (0.726-0.869)		

PPS	0.731 CI (0.647-0.809)	0.67 CI	0.634 CI	0.813 CI	0.750 CI (0.654-0.838)	0.675 CI (0.599-0.751)	0.769 CI (0.691-0.843)	0.683 CI (0.591-0.772)	
SA	0.820 CI (0.756-0.881)	0.823 CI	0.665 CI	0.759 CI	0.924 CI (0.872-0.971)	0.717 CI (0.607-0.819)	0.925 CI (0.870-0.973)	0.742 CI (0.656-0.823)	0.708 CI (0.616-0.796)

Notes: Abbreviation: Care Coordination for Cardiac Surgery Patients (CCP), Cross-Functional Teamwork (CFT), Electronic Medical Records Utilization (EMU), Evidence-Based Practice (EBP), Goal Alignment (GA), Hospital Management Support (HMS), Mutual Communication (MC), Patient Centricity (PC), Promotion of Patient Safety (PPS), Shared Accountability (SA).

construct) is contrasted with the monotrait value (another indicator with its own construct). If the HT/MT ratio is below 0.9, it indicates no issues with discrimination within the arrangement and confirms that the results are acceptable and, therefore, considered valid. These findings confirm that the indicators for each specific construct in the model are suitable and precise for measuring their respective constructs individually. In this study, the assessment of discriminant validity was conducted by examining the heterotrait-monotrait ratio (HT/MT Ratio). This ratio is deemed more precise in detecting discrimination issues and is currently advised for regular use. This method for discriminant testing is regarded as a more advanced approach than the traditional Fornell Larcker discriminant test in PLS-SEM analysis (Sarstedt *et al.*, 2022; Hair, 2022).

IPMA analysis was used to identify indicators for prioritizing their improvement activities (Ringle & Sarstedt, 2016). IPMA analysis allows the definition of the indicators and variables into four quadrants that allow for setting out four distinct strategies. In this study, care coordination for cardiac surgery patients was determined as the target construct because of its significant mediating role. The IPMA statistical method combines two aspects in one mapping to identify the relative position of variables and indicators in the research model. The first aspect is related to what is considered vital (importance) which is depicted in the axis or X-axis. The value is the result of inferential analysis, namely the total effect. Align with the coefficient value, the total effect value ranges from 0 to 1 (negative values are ignored in IPMA). The second aspect is related to performance in the eyes of respondents. This aspect is depicted on the Y axis, the result of answers to questionnaire items. This figure comes from the average of respondents' answers on a Likert scale (values 1 to 5) for each questionnaire item. This scale is then re-scaled to a value of 0 to 100. The results of IPMA statistical analysis are mapping, which variables or indicators managers need to prioritize in the decision-making process. By identifying these priorities, managers can allocate the resources they have. IPMA analysis is carried out by first getting the average value of the total effect and performance. The data used in calculations with IPMA is unstandardized. From this average value, a line will then be drawn in the output image of the IPMA calculation results with SmartPLS®4. The IPMA values for the constructs and the averages can be seen in **"Table 4."**

From "Table 4.", the mean value for importance and performance for both variables and indicators. The mean for the importance and performance of variables are 0.131 and 78.203, respectively. Values below this mean are considered low. The values above it are considered high. From this data, two lines can be drawn so that the four quadrants can be grouped in the graph, as shown in "Figure 2." From "Figure 1.", the target construct of the research model is none of the variables in the upper right quadrant. This quadrant shows important areas that have performed well. In the right lower quadrant, there was mutual communication (MC), which is a construct with the highest importance but

Table 4. Indicators and Variables Performance and Importance CCP

*Variable*s	Importance	Performance	Indicators	Importance	Performance
CFT	0.114	81.043	CFT1 CFT2 CFT3 CFT4	0.032 0.028 0.034 0.035	75.980 80.025 84.191 83.211
EBP	0.003	83.966	EBP1 EBP2 EBP3 EBP4	0.027 0.040 0.048 0.039	78.186 79.412 72.304 86.601
EMU	0.127	78.915	EMU1 EMU2 EMU3 EMU4	0.001 0.001 0.001 0.001	87.255 83.333 79.412 87.092
GA	0.080	73.750	GA1 GA2 GA3 GA4	0.024 0.026 0.023 0.018	79.575 71.569 69.363 75.123
MC	0.370	77.260	MC1 MC2 MC3 MC4 MC5 MC6	0.073 0.069 0.072 0.068 0.070 0.076	72.059 73.284 69.608 84.926 83.007 81.863
PPS	0.097	78.820	PPS1 PPS2 PPS3 PPS4 PPS5	0.025 0.021 0.025 0.027 0.025	85.131 80.392 73.775 83.824 68.627
SA	0.124	73.665	SA1 SA2 SA3 SA4	0.036 0.033 0.038 0.035	70.833 79.902 69.118 75.490
Mean	0.131	78.203	Mean	0.034	78.194

Notes: Abbreviation: Care Coordination for Cardiac Surgery Patients (CCP), Cross-Functional Teamwork (CFT), Electronic Medical Records Utilization (EMU), Evidence-Based Practice (EBP), Goal Alignment (GA), Mutual Communication (MC), Patient Centricity (PC), Promotion of Patient Safety (PPS), Shared

has not performed well for care coordination improvement. Therefore, it is necessary to take a crucial step as a priority on the part of the hospital management to improve effective communication for each unit team and each shift and facilitate a reporting system so that a good work environment can be established in the organization. The least important variable based on mapping is electronic medical records utilization (EMU), and the least performed variable is goal alignment (GA).

Meanwhile, "Figure 3." depicts the IPMA-Indicator analysis. The first part is the variable considered the most important by respondents and is in line with expectations (high importance-high performance), so it must be prioritized to be maintained. In this analysis, the indicators CFT4, EBP2, EBP 4, MC4, MC5, and MC6 are important indicators that already have high performance. Meanwhile, in section 2, the indicators SA1, SA3, SA4, EBP3, MC1, MC2, and MC3 were included in the high importance-

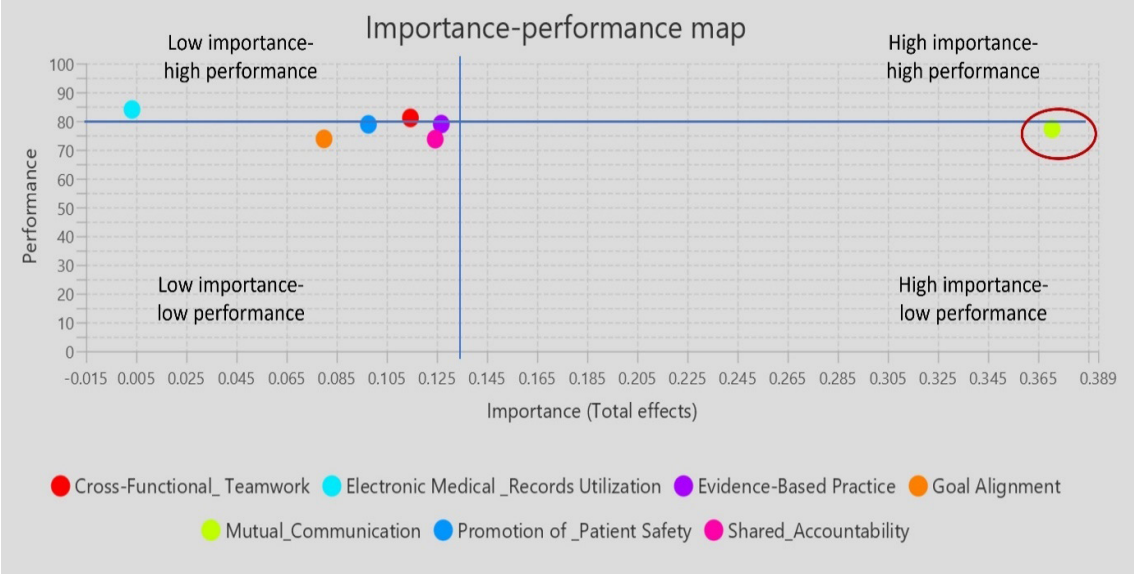

Figure 2. IPMA Variables Graph

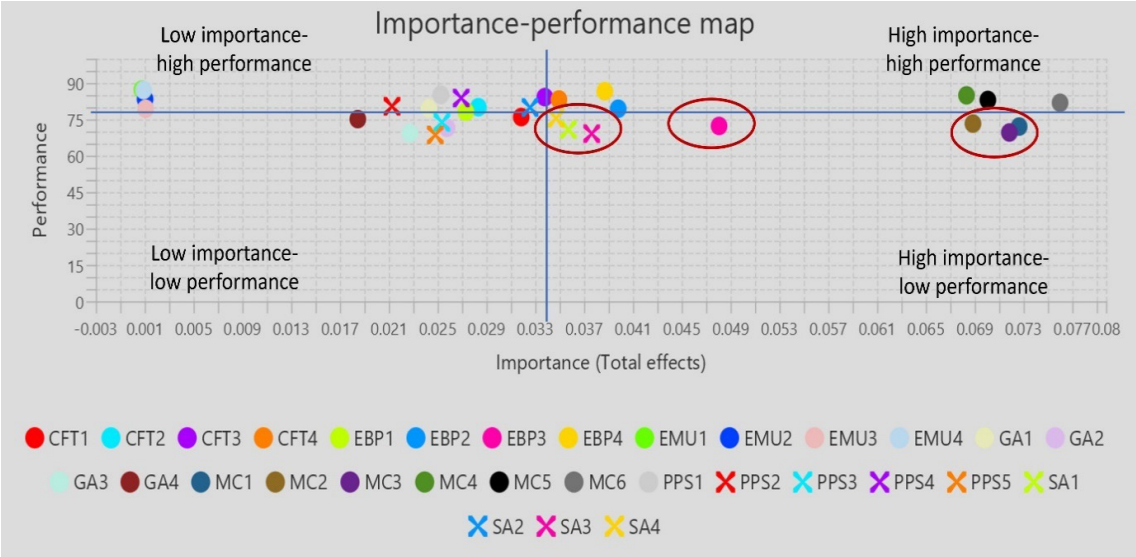

Figure 3. IPMA Indicators Graph

low performance category, so we concluded that respondents considered these indicators important. But performance was still low. Therefore, cardiac surgery services in teaching hospitals require improved performance from shared accountability, evidence-based practice, and mutual communication.

Organizations that have utilized Importance Performance Map Analysis (IPMA) have observed substantial enhancements in care coordination and service quality. Through prioritizing efforts based on the perceived importance and performance of key service attributes, healthcare managers can create more precise strategies for improvement (São João *et al.*, 2021). The previous research highlights the importance of effective communication between health professionals in ensuring smooth care coordination for patients (Miller *et al.*, 2007). The results show that when there is good mutual communication between the care team, overall care coordination improves, resulting in better patient outcomes and satisfaction. This highlights the importance

for healthcare institutions to prioritize and promote open and clear communication among their employees, to enhance care coordination and ultimately elevate the quality of service delivery (Palanisamy & Verville, 2015). We also noted that clear and regular communication between healthcare professionals helps prevent errors and minimizes risks to patient safety. These results from previous studies recognized communication challenges between physicians and nurses as a significant obstacle to advancing patient safety. This study also suggests that effective communication between academic coordinators and clinical facilitators in nursing programs is critical to managing multiple groups of students during clinical placements (Howard *et al.*, 2014). Overall, previous research provides strong evidence of a positive correlation between mutual communication and care coordination in various healthcare settings. This study shows that when health professionals are actively involved in mutual communication, this results in smoother care coordination and better for patients. It is by previous research which emphasizes the importance of communication in health services and its impact on patient satisfaction (Childress, 2015).

Evidence-based practice and care coordination are closely related to health services. The practice of evidence-based healthcare utilizes up-to-date research findings, clinical experience, and patient inclinations to influence and direct healthcare choices and treatments (Hunker *et al.*, 2014). Care coordination is a regulatory process that integrates care activities for patients across various health service settings and providers to ensure that health services are provided comprehensively and smoothly. When healthcare providers implement evidence-based practices, it can result in a more standardized and effective care process and improve care coordination performance. By combining the latest research findings and best practices, healthcare teams can align their efforts in coordinating patient care across settings and disciplines. It ultimately results in better patient results, higher patient contentment, and effective use of resources. Moreover, incorporating evidence-based guidelines and protocols into care coordination can minimize unnecessary differences in treatment and promote a more holistic approach to patient care. The synergy between evidence-based practice and care coordination highlights the importance of using current research evidence to inform and guide the coordination of care activities (Frank *et al.*, 2011). In short, evidence-based practice and care coordination are interconnected because the use of evidence-based practice can increase the effectiveness of care coordination efforts and ultimately improve patient outcomes (Phelps & Hyde, 2018).

In the healthcare sector, the importance of shared accountability and care coordination in improving patient outcomes and overall quality of care (Boddington, 2006). When healthcare providers and teams have shared accountability for patient care, there is a significant increase in care coordination. These improvements are seen in more efficient communication between healthcare professionals, increased collaboration and teamwork, and better patient outcomes. With strong shared accountability between health service providers, there will be increased care coordination in various environments and scientific disciplines. This study concludes that shared accountability contributes to improving service continuity, reducing treatment delays, and increasing patient satisfaction. These findings show that improving shared accountability in health services can result in better care coordination. Ultimately, results in better outcomes for patients (Page, 2004).

Conclusion

In conclusion, by the study's findings on the research model's constructs and indicators, it is important to incorporate shared accountability, evidence-based practice, and effective communication for enhancing care coordination and patient-centered care within the settings of cardiac surgery. These core principles are critical for achieving favorable results for patients undergoing cardiac surgery and should be emphasized in clinical settings.

References

Acuña Mora, M., Sparud-Lundin, C., Fernlund, E., Fadl, S., Kalliopi, K., Rydberg, A., Burström, Å., Hanseus, K., Moons, P., & Bratt, E.-L., 2022. The Longitudinal Association Between Patient Empowerment and Patient-Reported Outcomes: What is The Direction of Effect? *PloS One*, 17(11), pp.e0277267.

Acuña Mora, M., Sparud-Lundin, C., Moons, P., & Bratt, E.L., 2022. Definitions, Instruments and Correlates of Patient Empowerment: A Descriptive Review. *Patient Education and Counseling*, 105(2).

Ahmed, R.E., Bdair, I.A., Al-Mugheed, K., Alshahrani, S.H., Alalyani, M.M., Ramaiah, R., Abdelrahman, S.I., Mahmoud, S.A., & Arrab, M.M., 2023. Empowering Self-Efficacy by Using Patient Empowerment among Chronic Obstructive Pulmonary Disease: Pre-Post-Test Study. *Healthcare (Basel, Switzerland)*, 11(3).

Bailo, L., Guiddi, P., Vergani, L., Marton, G., & Pravettoni, G., 2019. The Patient Perspective: Investigating Patient Empowerment Enablers and Barriers Within The Oncological Care Process. *Ecancermedicalscience*, 13, pp.912.

Bougie, R., & Sekaran, U., 2020. Data Collection methods: Obervational. *Research Methods for Business: A Skill Building Approach*, John Wiley & Sons. pp.126–141.

Brown, A., Johnson, L., & Clark, R., 2023. The Paradox of Patient Empowerment: When More Control Does Not Improve Well-Being. *Journal of Patient Experience*, 11(1), pp.34–44.

Garcimartín, P., Comín-Colet, J., Pardo-Cladellas, Y., Badosa, N., Linas, A., Rosenfeld, L., Faraudo, M., Valero, O., Hidalgo, E., Cainzos-Achirica, M., Ruiz, S., & Delgado-Hito, P., 2020. Validation of the Spanish version of the questionnaire on Patient Empowerment in Long-Term Conditions. *PLoS ONE*, 15(6), pp.1–14.

Glendinning, A., Hendry, L., & Shucksmith, J., 1995. Lifestyle, Health and Social Class in Adolescence. *Social Science & Medicine*, 41(2), pp.235–248.

Gregg, A., Getz, N., Benger, J., & Anderson, A., 2019. A Novel Collaborative Approach to Building Better Clinical Trials: New Insights From a Patient Engagement Workshop to Propel Patient-Centricity Forward. *Therapeutic Innovation & Regulatory Science*, 2019.

Hair, J.F., Risher, J.J., Sarstedt, M., & Ringle, C.M., 2019. When to Use and How to Report The Results of PLS-SEM. *European Business Review*, 31(1), pp.2–24.

Henseler, J., Ringle, C., & Sarstedt, M., 2015. A New Criterion for Assessing Discriminant Validity in Variance-based Structural Equation Modeling. *Journal of the Academy of Marketing Science*, 43, pp.115–135.

Hickmann, E., Richter, P., & Schlieter, H., 2022. All Together Now – Patient Engagement, Patient Empowerment, and Associated Terms in Personal Healthcare. *BMC Health Services Research*, 22(1), pp.1116.

Hillger, C., 2008. *Lifestyle and Health DeterminantsLifestyle and Health Determinants BT - Encyclopedia of Public Health*. W. Kirch (ed.). Springer Netherlands. pp.854–861.

Lancet., 2023. Diabetes: A Defining Disease of the 21st Century. *Lancet (London, England)*, 401(10394), pp.2087.

Law, M., Steinwender, S., & Leclair, L,. 1998. Occupation, Health and Well-Being. *Canadian Journal of Occupational Therapy*, 65(2).

Lee, H., Kim, S., & Park, E., 2022. Exploring the Limits of Patient Empowerment: The Moderating Role of Lifestyle on Well-Being Outcomes. *Health Psychology Review*, 16(4), pp.251–263.

Lin, C.-Y., Cheung, M.K.T., Hung, A.T.F., Poon, P.K.K., Chan, S.C.C., & Chan, C.C.H., 2020. Can A Modified Theory of Planned Behavior Explain The Effects of Empowerment Education for People With Type 2 Diabetes? *Therapeutic Advances in Endocrinology and Metabolism*, 11.

McMaughan, D.J., Oloruntoba, O., & Smith, M.L., 2020. Socioeconomic Status and Access to Healthcare: Interrelated Drivers for Healthy Aging. *Frontiers in Public Health*, 8, pp.231.

Mogueo, A., & Defo, B.K., 2022. Patients' and Family Caregivers' Experiences and Perceptions About Factors Hampering or Facilitating Patient Empowerment for Self-Management of Hypertension and Diabetes in Cameroon. *BMC Health Services Research*, 22(1).

Navarro Martínez, O., Igual García, J., & Traver Salcedo, V., 2021. Estimating Patient Empowerment and Nurses' Use of Digital Strategies: eSurvey Study. *International Journal of Environmental Research and Public Health*, 18(18).

Organization, W.H., 2022. *Diabetes*. World Health Orgaization.

Paul, P., Hakobyan, M., & Valtonen, H., 2016. The Association Between Self-Perceived Health

Status and Satisfaction with Healthcare Services: Evidence from Armenia. *BMC Health Services Research*, 16, pp.67.

Punthakee, Z., Goldenberg, R., & Katz, P., 2018. Definition, Classification and Diagnosis of Diabetes, Prediabetes and Metabolic Syndrome. *Canadian Journal of Diabetes*, 42, pp.S10–S15.

Ramos-Vera, C., Saintila, J., Calizaya-Milla, Y.E., Acosta Enríquez, M.E., & Serpa Barrientos, A., 2022. Relationship Between Satisfaction With Medical Care, Physical Health, and Emotional Well-Being in Adult Men: Mediating Role of Communication. *Journal of Primary Care & Community Health*, 13.

Robyn, O.-M., Jillian, S., & Lester, J., 2015. The Dimensions of Patient Empowerment in the Context of Chronic Illness Consultations. *Angewandte Chemie International Edition*, 1(April), pp.951–952.

Ryynänen, S.P., 2023. Patient Process-Based Well-Being With the Support of a Close Person. *Journal of Patient Experience*, 10.

Saisho, Y., 2018. Use of Diabetes Treatment Satisfaction Questionnaire in Diabetes Care: Importance of Patient-Reported Outcomes. *International Journal of Environmental Research and Public Health*, 15(5), pp.11–17.

Sarstedt, M., Hair, J.F., Pick, M., Liengaard, B.D., Radomir, L., & Ringle, C.M., 2022. Progress in Partial Least Squares Structural Equation Modeling Use in Marketing Research in the Last Decade. *Pyschology & Marketing*, 39(5), pp.1035–1064.

Satir, Ç., 2006. The Nature of Corporate Reputation and The Measurement of Reputation Components: An Emprical Study Within A Hospital. *Corporate Communications: An International Journal*, 11, pp.56–63.

Sekaran, U., & Bougie, R., 2020. *Research Methods For Business: A Skill Building Approach* (7th editio). John Wiley and Sons Ltd.

Shmueli, G., Sarstedt, M., Hair, J.F., Cheah, J.-H., Ting, H., Vaithilingam, S., & Ringle, C.M., 2019. Predictive Model Assessment in PLS-SEM: Guidelines for Using PLSpredict. *European Journal of Marketing*, 23(11).

Stampe, K., Kishik, S., & Müller, S.D., 2021. Mobile Health in Chronic Disease Management and Patient Empowerment: Exploratory Qualitative Investigation Into Patient-Physician Consultations. *Journal of Medical Internet Research*, 23(6), pp.e26991.

Stepanian, N., Larsen, M.H., Mendelsohn, J.B., Mariussen, K.L., & Heggdal, K., 2023. Empowerment Interventions Designed for Persons Living with Chronic Disease - A Systematic Review and Meta-Analysis of The Components and Efficacy of Format on Patient-Reported Outcomes. *BMC Health Services Research*, 23(1).

Sun, T., Wang, J., Zhang, S., Shi, Y., Liu, B., & Wang, X., 2021. Status, Causes and Consequences of Physicians' Self-Perceived Professional Reputation Damage in China: A Cross-Sectional Survey. *BMC Health Services Research*, 21(1).

Verweij, L., Smit, Y., Blijlevens, N.M., & Hermens, R.P., 2022. A Comprehensive eHealth Implementation Guide Constructed on a Qualitative Case Study on Barriers and Facilitators of the Digital Care Platform CMyLife. *BMC Health Services Research*, 22(1).

Weisbeck, S., Lind, C., & Ginn, C., 2019. Patient Empowerment: An Evolutionary Concept Analysis. *International Journal of Caring Sciences*, 12(2), pp.1148–1155.

Yeh, M.-Y., Wu, S.-C., & Tung, T.-H., 2018. The Relation Between Patient Education, Patient Empowerment and Patient Satisfaction: A Cross-Sectional-Comparison Study. *Applied Nursing Research*, 39, pp.11–17.

Yeo, S.F., Tan, C.L., & Goh, Y.-N., 2021. Obstetrics Services in Malaysia: Factors Influencing Patient Loyalty. *International Journal of Pharmaceutical and Healthcare Marketing*, 15(3).