

Coronary Heart Disease Patients' Knowledge, Attitudes, and Practices Regarding Coronary Artery Bypass Grafting

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Background: Coronary heart disease (CHD) is a leading cause of mortality worldwide. Coronary artery bypass grafting (CABG) is a recognized effective treatment, particularly for patients with complex multivessel disease. However, there is limited research on the knowledge, attitudes, and practices (KAP) of CHD patients toward this surgery.

Aim: This study aimed to investigate the KAP of CHD patients regarding CABG.

Methods: A cross-sectional study was conducted from September 13, 2023 to January 25, 2024 at the Cardiology and Cardiothoracic Surgery Departments of Zhengzhou Seventh People's Hospital through the dissemination of a self-designed KAP questionnaire, which demonstrated good internal consistency with a Cronbach's α coefficient of 0.921 in the pilot test.

Results: A total of 427 participants (mean age 58.05 ± 13.2 years; 62.53% male) were enrolled. Among them, 151 (35.36%) had undergone or are scheduled for CABG. The mean knowledge, attitude, and practice scores were 6.03 ± 2.16 , 43.03 ± 6.61 , and 37.7 ± 5.51 , respectively. Participants with CABG experience or plans exhibited significantly higher attitude and knowledge scores compared to those without. Correlation analyses showed that there were significant positive correlations between knowledge and attitude ($r = 0.128$, $P = 0.008$) as well as practice ($r = 0.202$, $P < 0.001$). Also, there was a correlation between attitude and practice ($r = 0.654$, $P < 0.001$). Multivariate analyses showed that attitude score (OR = 1.294, 95% CI: [1.226–1.367], $P < 0.001$), marital status other than married (OR = 2.32, 95% CI: [1.048–5.136], $P = 0.038$) were independently associated with proactive practice.

Conclusion: CHD patients exhibited insufficient knowledge, positive attitudes and proactive practices regarding CABG. Healthcare professionals should prioritize patient education initiatives aimed at enhancing knowledge regarding CABG, while also reinforcing and leveraging positive attitudes and proactive behaviors to optimize patient outcomes and treatment adherence.

Keywords: coronary heart disease, coronary artery bypass grafting, knowledge, attitude, practice

Introduction

Coronary Heart Disease (CHD), characterized by myocardial ischemia or necrosis due to coronary atherosclerosis-induced stenosis or occlusion, is a significant cardiovascular ailment.¹ Coronary revascularization, encompassing percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG), serves as a crucial therapeutic approach.² Internationally recognized as highly effective in treating CHD, especially in cases featuring multiple branch and lesion indications, CABG stands out as a primary treatment strategy.³ This procedure involves replacing blocked coronary arteries to enhance myocardial blood supply, alleviate angina pectoris, improve quality of life, and mitigate the risk of CHD-related mortality.⁴ Utilizing grafts or bridged blood vessels, surgeons create a pathway between the ascending aortic root and the diseased coronary artery, facilitating improved myocardial perfusion during CABG.⁵ Notably, over the past two decades, there has been a significant surge in the proportion of CABG procedures, with more than half occurring in mainland China.⁶

The knowledge, attitude, and practice (KAP) model, which posits that individual behaviors are contingent upon one's knowledge and attitude, holds paramount significance in elucidating health-related behaviors in the realm of public health. Such examination of behavioral practices is commonly accompanied by the assessment of knowledge and risk perception, often conducted through KAP surveys.^{7,8} Considering that CHD patients may require CABG, their knowledge, attitudes, and practices regarding CABG may influence their medical decision-making and treatment outcomes. If patients comprehend and actively support CABG surgery, they may be more inclined to accept treatment and actively engage in rehabilitation plans, thus enhancing treatment effectiveness. However, misunderstandings or concerns about CABG, coupled with a lack of positive attitudes and behaviors, may lead to treatment delays or suboptimal recovery. Therefore, investigating the KAP levels of CHD patients can guide clinical practitioners in better communicating with patients, addressing their concerns, and devising personalized treatment plans to enhance treatment effectiveness and quality of life.

Additionally, a previous study has shown that web-based information-knowledge-attitude-practice continuous intervention can effectively improve psychological health, medical compliance, and quality of life in CHD patients who underwent CABG operation.⁹ Although multiple KAP studies have investigated coronary heart disease in general,^{10,11} such as those focusing on medication adherence or lifestyle behaviors, there remains a notable gap in literature specifically examining patients' KAP towards CABG procedures. Hence, this study aimed to investigate the knowledge, attitudes, and practices of CHD patients regarding CABG.

Methods

Study Design and Participants

This cross-sectional study was conducted between September 13, 2023 and January 25, 2024 at the Cardiology and Cardiothoracic Surgery Departments of Zhengzhou Seventh People's Hospital (Zhengzhou Cardiovascular Hospital), a tertiary Grade A hospital, among patients diagnosed with coronary heart disease. Ethical approval for the study protocol was obtained from the ethics committee of Zhengzhou Seventh People's Hospital [20230901001], and informed consent was obtained from all participants.

The Inclusion Criteria Were as Follows

Diagnosis: Patients with suspected or confirmed coronary heart disease. Suspected cases referred to those hospitalized under a CHD diagnosis with typical angina symptoms, while confirmed cases were defined as those with $\geq 50\%$ coronary artery stenosis confirmed by coronary angiography.

Communication ability: Capable of understanding the investigator's questions and communicating effectively in the study language, either independently or with assistance, to complete the questionnaire or interview.

Cognitive ability: Possessed sufficient cognitive function to comprehend the study objectives and process, and provide reasonable responses to the questions.

Exclusion criteria: Patients under 18 years of age; patients with severe cognitive impairment or psychiatric disorders that would preclude informed consent; patients unable to communicate in the study language; and patients in a critically unstable condition.

Informed consent: Fully understood the study content and voluntarily signed the informed consent form.

Data collection was primarily conducted in the Cardiology and Cardiothoracic Surgery wards of the study hospital. A consecutive sampling method was used to recruit participants who met the inclusion criteria. Trained research staff systematically identified eligible inpatients based on the inclusion and exclusion criteria. Subsequently, one-on-one communication was carried out between the investigators and each patient to explain the study's objectives, content, procedures, voluntariness, and data confidentiality measures. Upon ensuring that the patient fully understood the study and expressed willingness to participate, written informed consent was obtained.

Following consent, questionnaires were administered via the electronic platform Questionnaire Star (<https://www.wjx.cn/app/survey.aspx>). To ensure data quality, a collection team of seven researchers with medical master's degrees guided the process. Patients were encouraged to complete the questionnaire independently when possible. For elderly individuals

or those with limited educational backgrounds, assistance was provided by family members under the researcher's guidance.

Questionnaire Introduction

The questionnaire design was informed by relevant guidelines and literature, including the 2019 Chinese Expert Consensus on Coronary Artery Bypass Grafting.¹² Subsequently, feedback from experts in was sought to enhance the questionnaire's clarity and comprehensiveness. A pilot study involving 35 participants was conducted to assess the questionnaire's reliability. The total Cronbach's α coefficient for the pre-test feedback scale was found to be 0.921. The final questionnaire encompassed four aspects: demographic information, knowledge dimension, attitude dimension, and practice dimension. The knowledge dimension comprised 10 questions, addressing topics such as the definition of CABG, its benefits, indications, and postoperative management. Responses were scored as 1 point for correct answers and 0 points for incorrect or unclear responses, resulting in a total score ranging from 0 to 10. The attitude dimension included 11 questions, utilizing a five-point Likert scale ranging from very positive (5 points) to very negative (1 point), with a total score ranging from 11 to 55. Similarly, the practice dimension consisted of 9 questions, also employing a five-point Likert scale ranging from always (5 points) to never (1 point), with a total score ranging from 9 to 45. Attaining scores above 70% of the maximum in each section indicated adequate knowledge, positive attitude, and proactive practice.¹³

Sample Size Calculation

To determine the required sample size for this cross-sectional study, the following formula was applied: $n = (Z^2 \times P \times (1 - P)) / E^2$, where $Z = 1.96$ (corresponding to a 95% confidence level), $P = 0.5$ (estimated proportion to maximize sample size), and $E = 0.05$ (margin of error). The theoretical sample size was calculated to be 384. To account for potential attrition or invalid responses, a 20% increase was applied, resulting in a final target sample size of approximately 480 participants.¹⁴

Statistical Analysis

Data analysis was conducted using SPSS 22.0 (IBM, Armonk, NY, USA). Continuous data are presented as means and standard deviations (SD), while categorical data are expressed as n (%). Continuous variables underwent a normality test, with the t -test for normally distributed data and the Wilcoxon Mann–Whitney test for non-normally distributed data when comparing two groups. For three or more groups with normally distributed continuous variables and uniform variance, ANOVA was used for comparisons, while the Kruskal–Wallis test was employed for non-normally distributed data. Spearman was used to analyze the correlation of knowledge, attitude, and practice scores. Univariate and multivariate logistic regression were performed to explore the risk factors associated with practice. Practices were categorized into better (≥ 37.8 points, 80% of scale) and poorer performance groups. Variables with a P -value < 0.05 in the univariate analysis were included in the multivariate logistic regression model. A two-sided P -value less than 0.05 was considered statistically significant.

Results

Initially, a total of 468 questionnaires were collected, and the following questionnaires were deleted, which included: 1. 3 cases of disagreement with the study; 2. 17 cases of response time less than 90 seconds; 2 cases of more than 1,800 seconds; and 3. 19 cases of IP duplication. There were 427 cases of remaining valid questionnaires, with a validity rate of 91.24%. The overall reliability of the formal questionnaire was 0.908. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.929.

Among 427 participants, 267 (62.53%) were male, with a mean age of 58.05 ± 13.2 , and 151 (35.36%) had or will undergo CABG. The mean knowledge, attitude, and practice scores were 6.03 ± 2.16 (possible range: 0–10), 43.03 ± 6.61 (possible range: 11–55), and 37.7 ± 5.51 (possible range: 9–45), respectively. Participants who differed in whether they had consumed alcohol in the past month ($P = 0.005$) and whether they had or will undergo CABG ($P = 0.008$) were more likely to have different knowledge scores. Those who differed in education ($P = 0.014$) and whether they had or will undergo CABG ($P < 0.001$) were more likely to have different attitude scores (Table 1).

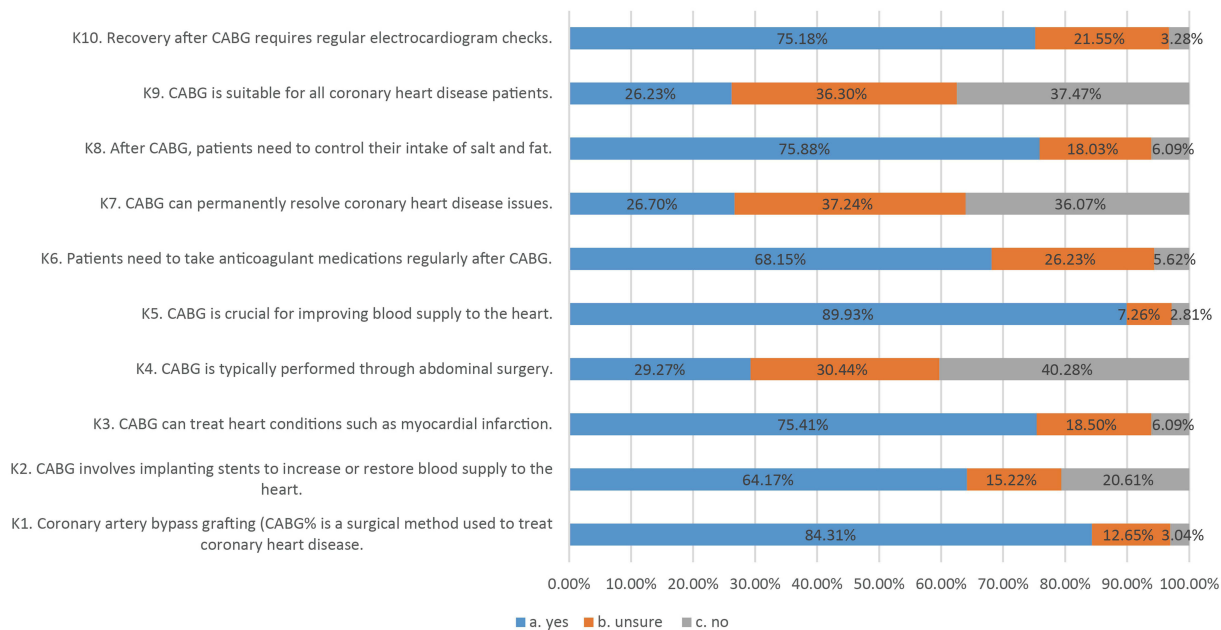
The distribution of the knowledge dimension showed varying degrees of understanding among participants. The item with the highest correct response rate was “CABG is crucial for improving blood supply to the heart” (K5), with 89.93% answering “yes” correctly. High correct response rates were also seen for K1 and K8, indicating that most participants

Table 1 Baseline Characteristics and KAP Scores of Participants

	N (%)	Knowledge		Attitude		Practice	
		Score	P	Score	P	Score	P
Total score		6.03±2.16		43.03±6.61		37.7±5.51	
Gender			0.119		0.359		0.264
Male	267(62.53)	6.15±2.1		42.86±6.56		37.93±5.5	
Female	160(37.47)	5.83±2.25		43.3±6.69		37.33±5.51	
Age	58.05±13.26						
BMI	25.47±5.69						
Education			0.134		0.014		0.099
Primary school and below	113(26.46)	5.95±2.12		42.45±6.23		37.23±5.38	
Junior high school	135(31.62)	5.79±2.08		43.12±6.02		37.86±5.02	
High school/technical school	93(21.78)	6.16±2.27		41.6±7.57		36.81±6.66	
Associate degree /bachelor's degree and above	86(20.14)	6.4±2.19		45.17±6.42		39.03±4.8	
Marital status			0.883		0.801		0.222
Married	382(89.46)	6.03±2.11		42.97±6.62		37.61±5.5	
Other	45(10.54)	6.09±2.53		43.53±6.54		38.44±5.54	
Residence			0.921		0.611		0.325
City	194(45.43)	5.97±2.27		43.19±6.81		37.97±5.26	
Non-city	233(54.57)	6.08±2.07		42.89±6.45		37.47±5.71	
Employment status			0.155		0.448		0.806
Unemployed	84(19.67)	5.74±2.3		43.11±7.76		37.54±6.08	
Employed	160(37.47)	5.94±2.12		43.54±6.25		37.94±5.45	
Retired	183(42.86)	6.25±2.11		42.54±6.34		37.57±5.3	
Have you smoked in the past month			0.673		0.091		0.620
Never smoked	232(54.33)	6.13±2.11		43.56±6.44		37.98±5.4	
Occasionally smoked s	57(13.35)	5.7±2.22		42.56±7.27		36.75±6.25	
Regularly smoked	58(13.58)	6.09±2.16		41.45±6.48		37.52±5.1	
Quit smoking	80(18.74)	5.96±2.28		42.95±6.6		37.7±5.54	
Have you drunk alcohol in the past month			0.005		0.535		0.938
Yes	127(29.74)	5.5±2.33		43.07±7.24		37.42±5.81	
No	300(70.26)	6.26±2.04		43.01±6.33		37.82±5.38	
Do you suffer from chronic diseases such as hypertension/hyperlipidemia/diabetes			0.816		0.943		0.665
Yes	247(57.85)	6.07±2.17		42.96±6.46		37.9±5.11	
No	180(42.15)	5.98±2.14		43.12±6.82		37.42±6.01	
Do you have a family history of coronary heart disease			0.620		0.915		0.630
Yes	113(26.46)	5.95±2.28		42.84±6.94		37.77±5.5	
No	314(73.54)	6.06±2.12		43.09±6.5		37.68±5.52	
Inpatient department			0.493		0.230		0.980
Cardiology	252(59.02)	6.04±2.24		42.84±6.86		37.78±5.27	
Cardiothoracic surgery	175(40.98)	6.02±2.05		43.3±6.24		37.59±5.84	
Have you undergone or are you going to undergo coronary artery bypass grafting			0.008		<0.001		0.073
Yes	151(35.36)	6.02±2.08		44.35±6.49		38.52±4.97	
No	216(50.59)	6.25±2.12		42.77±6.26		37.51±5.46	
Unclear	60(14.05)	5.27±2.34		40.62±7.4		36.3±6.62	

understood the basic purpose and postoperative dietary needs of CABG. In contrast, several misconceptions were evident. For instance, only 64.17% correctly answered “no” to K2, which falsely associates CABG with stent implantation, suggesting confusion between CABG and PCI. Similarly, only 26.7% correctly rejected the statement “CABG can permanently resolve coronary heart disease issues” (K7), reflecting an overly optimistic view of the surgery’s curative effect. Additionally, K4 (“CABG is typically performed through abdominal surgery”) was correctly rejected by 40.28% of participants, implying a significant proportion still held anatomical misunderstandings about the procedure (Figure 1A).

A



B

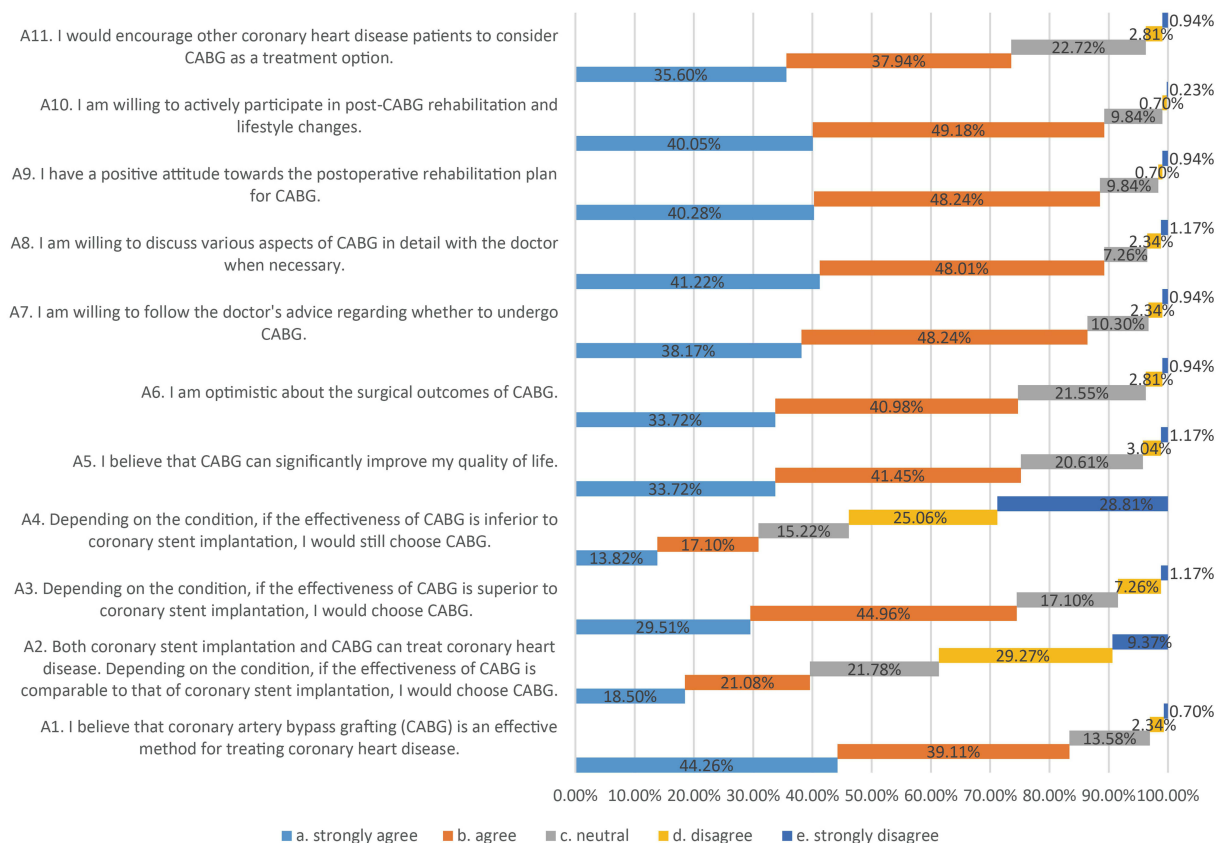


Figure 1 Continued.

C

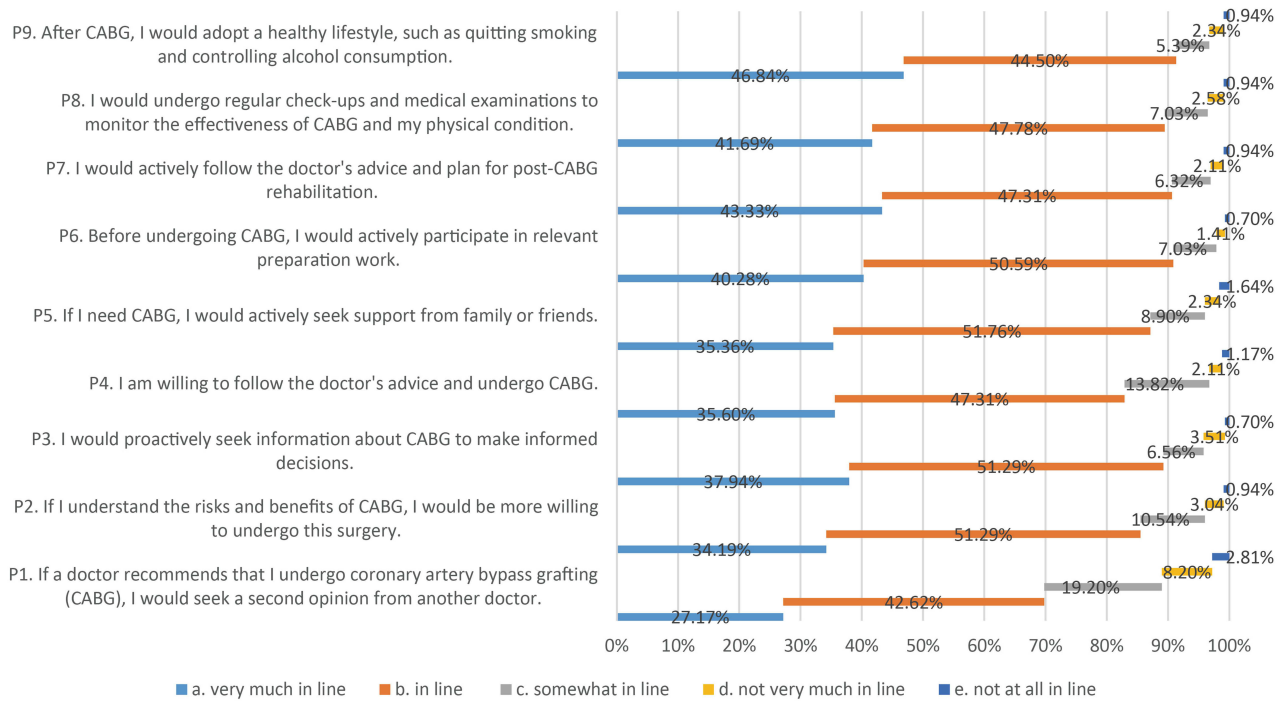


Figure 1 (A) Knowledge dimension of the participants; (B) Attitude dimension of the participants; (C) Practice dimension of the participants.

Responses to the attitude dimension showed that 44.26% strongly agreed that CABG is an effective treatment for coronary heart disease (A1), 49.18% were willing to actively participate in post-CABG rehabilitation and lifestyle changes (A10), and 48.24% were willing to follow the doctor’s advice on whether or not to undergo CABG (A7). However, 29.27% preferred coronary stent implantation instead of CABG when they had comparable effectiveness (A2) (Figure 1B).

When it comes to CABG related practices, 46.84% were confident that they would adopt a healthy lifestyle after the surgery (P9). Meanwhile, 51.76% stated that they would actively seek support from their family or friends when the surgery is needed (P5), 51.29% indicated that they would be more willing to undergo the surgery after learning about the risks and benefits (P2), and the same percentage reported that they would be proactive in seeking information to make an informed decision (P3) (Figure 1C).

Correlation analyses showed that there were significant positive correlations between knowledge and attitude ($r = 0.128, P = 0.008$) as well as practice ($r = 0.202, P < 0.001$). Also, there was a correlation between attitude and practice ($r = 0.654, P < 0.001$) (Table 2).

To further explore the factors associated with practice, multivariate analyses were performed and the results showed that attitude score (OR = 1.294, 95% CI: [1.226–1.367], $P < 0.001$), marital status other than married (OR = 2.32, 95% CI: [1.048–5.136], $P = 0.038$) were independently associated with proactive practice (Table 3).

Table 2 Correlation Analysis of KAP Scores

	Knowledge	Attitude	Practice
Attitude	0.128 (P=0.008)	–	
Practice	0.202 (P<0.001)	0.654 (P<0.001)	–

Table 3 Univariable and Multivariable Logistic Regression

Practice dimension	Univariable		Multivariable	
	95% CI	P	95% CI	
Knowledge dimension	1.108(1.013–1.212)	0.025	1.047(0.934–1.172)	0.43
Attitude dimension	1.282(1.218–1.349)	<0.001	1.294(1.226–1.367)	<0.001
Gender				
Male	REF			
Female	0.916(0.619–1.356)	0.661		
Age	0.986(0.972–1)	0.053		
BMI	1.037(1.002–1.074)	0.038	1.039(0.994–1.087)	0.09
Education				
Primary school and below	REF			
Junior high school	1.287(0.779–2.127)	0.325		
High school/technical school	1.03(0.592–1.791)	0.917		
Associate degree /bachelor's degree and above	1.73(0.982–3.047)	0.058		
Marital status				
Married	REF		REF	
Other	1.888(1–3.563)	0.04998	2.32(1.048–5.136)	0.038
Residence				
City	REF			
Non-city	0.846(0.578–1.239)	0.391		
Employment status				
Unemployed	REF			
Employed	0.887(0.523–1.504)	0.656		
Retired	0.755(0.45–1.266)	0.286		
Have you smoked in the past month				
Never smoked	REF			
Occasionally smoked s	1.072(0.6–1.914)	0.814		
Regularly smoked	0.784(0.439–1.4)	0.411		
Quit smoking	0.937(0.563–1.558)	0.8		
Have you drunk alcohol in the past month				
Yes	REF			
No	0.739(0.488–1.121)	0.154		
Do you suffer from chronic diseases such as hypertension/hyperlipidemia/diabetes				
Yes	REF			
No	0.897(0.61–1.317)	0.578		
Do you have a family history of coronary heart disease				
Yes	REF			
No	0.931(0.606–1.431)	0.744		
Inpatient department				
Cardiology	REF			
Cardiothoracic surgery	1.022(0.695–1.504)	0.91		
Have you undergone or are you going to undergo coronary artery bypass grafting				
Yes	REF		REF	
No	0.643(0.423–0.977)	0.039	0.885(0.532–1.472)	0.638
Unclear	0.717(0.393–1.306)	0.277	1.559(0.726–3.35)	0.255

Discussion

CHD patients exhibited a notable discrepancy in their levels of knowledge, attitude, and practice concerning CABG, with insufficient knowledge but positive attitudes and proactive practices. Healthcare providers should prioritize interventions aimed at enhancing patient education and fostering positive attitudes toward CABG, particularly among individuals with less proactive practices and those who are not married, to improve their engagement in proactive healthcare behaviors.

The study provides valuable insights into the KAP of CHD patients regarding CABG. A key finding is the disparity among CHD patients regarding their KAP levels concerning CABG. While the overall knowledge level appears

insufficient, participants demonstrate positive attitudes and proactive practices toward CABG. This finding is consistent with prior literature, which indicates that patients' post-CABG often lack dietary habits and nutritional knowledge, and have substantial information-seeking needs.¹⁵ However, in contrast to previous studies that emphasized gaps in both knowledge and follow-up behavior, our findings reveal that despite limited knowledge, participants exhibited relatively positive attitudes and proactive practices.^{16,17} This discrepancy may reflect improved awareness and engagement in recent years due to increased health education efforts or greater emphasis on rehabilitation programs.

Interestingly, education emerges as a significant predictor of attitude, with individuals holding higher degrees exhibiting more favorable attitudes towards CABG. This aligns with existing research suggesting a positive correlation between education level and health-related attitudes.^{18,19} Moreover, the inverse relationship between alcohol consumption and knowledge scores underscores the potential influence of lifestyle factors on patient understanding of medical procedures. Comparable studies have shown similar associations between lifestyle behaviors and health-related knowledge.^{20,21} Notably, participants planning or undergoing CABG display significantly higher attitude and practice scores, indicating a proactive approach toward their treatment. This finding emphasizes the impact of personal experience on patient engagement and adherence to medical recommendations.^{22,23}

Multivariate analyses further elucidate factors influencing proactive practice behaviors among CHD patients. The results highlight the pivotal role of attitude in driving proactive practices, with higher attitude scores positively associated with proactive behaviors. This underscores the importance of addressing patients' attitudes toward medical interventions to foster favorable health outcomes.²⁴ Additionally, marital status emerges as a significant predictor, with unmarried individuals exhibiting a higher likelihood of proactive practice. While the association between marital status and health behaviors is less explored, some studies suggest that social support networks within marital relationships may positively impact health-related behaviors.²⁵ One possible explanation is that unmarried individuals—including those who are divorced or widowed—may be more accustomed to managing their health independently and may proactively seek medical information or support in the absence of spousal assistance. Alternatively, they may perceive a greater need to take initiative in decision-making and health maintenance due to the lack of immediate family caregiving.

Correlation analyses reveal significant positive associations between knowledge, attitude, and practice scores. The findings suggest that individuals with higher knowledge levels are more likely to exhibit positive attitudes and proactive behaviors toward CABG. Moreover, a strong correlation between attitude and practice underscores the influential role of attitudes in shaping patient behaviors. These findings resonate with existing research emphasizing the interplay between knowledge, attitudes, and behaviors in healthcare decision-making.^{26,27} Similar findings were reported in an Indian study assessing knowledge, attitudes, and self-reported practices regarding cardiac rehabilitation among post-CABG patients. In that study, the majority had average knowledge (85%), positive attitudes (66.7%), and good self-reported practices (80%) toward cardiac rehabilitation, closely paralleling our observation of insufficient knowledge yet favorable attitudes and proactive practices. However, while our study examined KAP regarding CABG in general, the Indian study focused specifically on rehabilitation-related aspects, including exercise phases, team composition, and cardiovascular risk factor management. Both sets of findings suggest that although patients tend to adopt positive attitudes and engage in recommended behaviors, knowledge gaps—particularly in disease-specific or procedure-specific domains—persist and may limit optimal utilization of rehabilitation resources.²⁸

Participants exhibited varying levels of understanding regarding CABG, with some acknowledging its role in treating heart disease but others misunderstanding aspects such as the surgical method and permanence of its effects. To address these gaps, tailored educational interventions should clarify CABG procedures and outcomes, ensuring patients have accurate information before making treatment decisions. These interventions could include informative brochures, multimedia presentations, and one-on-one discussions with healthcare providers to address specific concerns and misconceptions.²⁹

Overall, participants displayed positive attitudes toward CABG, expressing confidence in its effectiveness and potential to improve quality of life. However, uncertainties arose regarding its comparative effectiveness with alternative treatments, emphasizing the need for thorough discussions and patient education to inform decision-making. Healthcare providers should engage patients in detailed discussions regarding treatment options, emphasizing CABG's long-term

benefits and potential advantages over alternative interventions. Additionally, patient education materials addressing common misconceptions and concerns surrounding CABG should be made readily available.³⁰

While participants demonstrated readiness to engage in behaviors supportive of successful CABG outcomes, such as seeking information and social support, hesitancy was observed in seeking second opinions and adopting postoperative lifestyle changes. To address this, healthcare providers should emphasize the importance of these behaviors during preoperative counseling sessions and provide personalized support mechanisms, such as peer mentoring programs or digital health platforms, to enhance patient motivation and adherence. Moreover, establishing support groups for patients undergoing CABG and their families can provide a platform for sharing experiences and tips for managing postoperative challenges. Additionally, incorporating follow-up sessions with healthcare providers to monitor patient progress and address any concerns or barriers to adherence can further support patients in maintaining healthy behaviors post-CABG.^{31,32}

Limitations of this study include the reliance on self-reported data, which may introduce response bias and affect the accuracy of participants' responses. Additionally, the cross-sectional design limits our ability to establish causal relationships between knowledge, attitudes, and practices regarding CABG. Furthermore, the study sample primarily consisted of CHD patients from a single-center in Zhengzhou, China, which may limit the generalizability of the findings to other regions or healthcare settings. Despite these limitations, strengths of this paper include its comprehensive assessment of knowledge, attitudes, and practices regarding CABG among CHD patients, as well as the utilization of robust statistical analyses to explore correlations and factors influencing proactive practice behaviors. Limitations of this study include the reliance on self-reported data, which may introduce response bias and affect the accuracy of participants' responses. Additionally, our study included both patients with confirmed CHD and those with suspected CHD based on typical symptoms. While this reflects the real-world clinical population encountering CABG-related information, we did not perform a subgroup analysis, and future research could explore potential differences between these groups. Furthermore, the cross-sectional design limits our ability to establish causal relationships between knowledge, attitudes, and practices regarding CABG. Additionally, the large sample size enhances the reliability and statistical power of the study findings.

Conclusion

CHD patients exhibited inadequate knowledge alongside positive attitudes and proactive practices concerning CABG. Efforts should be directed towards enhancing patient education programs, particularly focusing on improving knowledge gaps. In addition, interventions should leverage and reinforce patients' existing positive attitudes, given their strong association with proactive practices, to promote informed decision-making and sustained adherence to recommended care.

Data Sharing Statement

All data generated or analysed during this study are included in this published article.

Ethics Approval and Consent to Participate

This work has been carried out in accordance with the Declaration of Helsinki (2000) of the World Medical Association. This study was approved by the Ethics Committee of Zhengzhou Seventh People's Hospital (20230901001), and informed consent was obtained from all participants.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests.

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