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# A Study On Knowledge, Attitudes, And Practices Related to Lifestyle Interventions for The Prevention of Recurrent Myocardial Infarction in Patients with Cardiogenic Shock

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**Abstract**

**Background:** Survivors of myocardial infarction complicated by cardiogenic shock (CS) face heightened recurrence risk, yet their knowledge, attitudes, and practices (KAP) regarding lifestyle interventions remain uncharacterized. This study assessed KAP profiles and determinants of preventive behaviors in this vulnerable population.

**Methods:** This multicenter cross-sectional study enrolled 284 CS survivors (mean age 62.4±11.8 years) from three tertiary centers. Knowledge, attitudes, and practices were evaluated using a validated 42-item questionnaire. Multivariate logistic regression identified predictors of poor preventive practices (below-median practice scores).

**Results:** Mean knowledge score was 14.2±4.8/24 (59.2%); 72.5% demonstrated favorable attitudes; however, only 38.7% exhibited adequate practices. Significant knowledge gaps existed regarding exercise prescription and atypical symptoms. Lower educational attainment (AOR=0.42, 95% CI: 0.24–0.73), unemployment (AOR=0.51, 95% CI: 0.28–0.93), absence of cardiac rehabilitation (AOR=0.33, 95% CI: 0.18–0.61), and cardiac invalidism beliefs (AOR=2.89, 95% CI: 1.64–5.08) independently predicted poor practices.

**Conclusions:** CS survivors demonstrate a substantial knowledge-to-action gap, with favorable attitudes failing to translate into adequate preventive behaviors. Psychological barriers and lack of structured rehabilitation emerge as critical obstacles. Targeted educational interventions and mandatory rehabilitation referral are essential to reduce recurrence risk in this high-risk cohort.

**Keywords:** Cardiogenic shock, Secondary prevention, Lifestyle modification, Knowledge-attitudes-practices, Myocardial infarction.

## 1. Introduction

Cardiovascular diseases are a health problem worldwide and a leading cause of death and sickness. Myocardial infarction, also known as a heart attack is a condition that happens when the blood flow to the heart is blocked, causing damage to the heart muscle[1,2]. With improvements in medical treatment and procedures to restore blood flow people who have had a heart attack are still at risk of having another one, which can lead to more health problems higher healthcare costs and a lower quality of life[21].Having a heart attack is especially worrying because it can cause more damage to the heart affect its function and lead to worse outcomes compared to a first heart attack. One of the severe consequences of a second heart attack is cardiogenic shock[3], a life-threatening condition where the heart cannot pump enough blood leading to problems with other organs. With better emergency care cardiogenic shock is still very deadly and needs to be treated quickly to save lives[22]. Lifestyle habits, such as eating foods not exercising, smoking, drinking too much alcohol being overweight having high blood pressure, diabetes, high cholesterol and being stressed play a big role in the development and recurrence of heart attacks. Changing these habits can greatly reduce the risk of having another heart attack improve heart health and lead to long-term outcomes[4]. As a result lifestyle changes have become a part of preventing further heart problems in people with cardiovascular disease. For lifestyle changes to work patients need to understand their condition believe in the importance of prevention. Make healthy choices. Knowing about heart risks signs of a heart attack taking medication correctly and practicing habits helps patients make informed decisions about their health. Having an attitude towards prevention can motivate people to make lifestyle changes while good habits determine how well they stick to these changes[23]. Therefore understanding patients knowledge, attitudes and practices provides insights into their readiness to engage in behaviors that reduce the risk of another heart attack[5,6]. Patients who have had shock after a heart attack are particularly vulnerable. They often need term medical treatment, regular check-ups and significant lifestyle adjustments to prevent further heart problems. However a lack of awareness misconceptions about managing their condition not taking medication as prescribed and unhealthy habits may limit the effectiveness of prevention efforts. Identifying gaps in knowledge and understanding patient attitudes and practices can help healthcare professionals design targeted programs and patient-centered strategies to improve heart health outcomes. Several studies have shown that education and lifestyle changes are crucial in reducing recurrent heart problems. However there is still a need to assess the level of awareness and behavioral practices among patients who have experienced a heart attack complicated by shock. Understanding these factors is essential for developing health promotion programs strengthening patient counseling services and enhancing adherence to evidence-based preventive measures. Therefore this study aims to assess the knowledge, attitudes and practices related to lifestyle interventions for the prevention of myocardial infarction among patients, with cardiogenic shock. The findings of this study may help identify needs support the development of targeted intervention programs and ultimately improve long-term cardiovascular health outcomes in this high-risk patient population[24].

## 2. Aim & Objective:

### Aim

To assess the knowledge, attitudes, and practices (KAP) regarding lifestyle-based secondary prevention among survivors of myocardial infarction complicated by cardiogenic shock, and to identify factors influencing preventive health behaviours in order to reduce the risk of recurrent cardiovascular events.

**Objective**

1. To evaluate the level of knowledge regarding lifestyle modifications for secondary prevention among survivors of myocardial infarction with cardiogenic shock.
2. To assess patient attitudes toward lifestyle interventions such as diet modification, physical activity, smoking cessation, medication adherence, and stress management.
3. To determine the extent of actual preventive practices adopted by these patients after discharge.
4. To identify the prevalence of psychological barriers such as cardiac invalidism, anxiety, and depression that may affect preventive behaviors.
5. To examine the association between sociodemographic factors (age, gender, education, employment status) and preventive practices.
6. To evaluate the impact of cardiac rehabilitation participation on knowledge and lifestyle adherence.
7. To analyze the correlation between knowledge, attitudes, and practices using the KAP framework.

## 3. Plan of Work

The present dissertation work "A Study on Knowledge, Attitudes, and Practices Related to Lifestyle Interventions for the Prevention of Recurrent Myocardial Infarction in Patients with Cardiogenic Shock" was planned in 5 phases and to be carried out for a period. The proposal was designed as follows.

**Phase I: Study Planning and Protocol Development**

- Extensive literature review on cardiogenic shock and secondary prevention of myocardial infarction.
- Identification of research gap in knowledge, attitudes, and practices (KAP) among cardiogenic shock survivors.
- Preparation of study protocol including study design, objectives, methodology, and statistical plan.
- Selection and validation review of study tools:

42-item KAP questionnaire
Cardiac Invalidism Scale

**Phase II: Patient Identification and Recruitment**

- Screening of medical records in cardiology department.
- Identification of eligible patients (3–12 months post cardiogenic shock complicating myocardial infarction).
- Application of inclusion and exclusion criteria.
- Explanation of study objectives to eligible participants.
- Obtaining informed consent.
- Enrollment of approximately 200–250 participants (as per sample size calculation).

**Phase III: Data Collection**

- Collection of sociodemographic data (age, gender, education, employment, marital status).
- Recording clinical details (LVEF, comorbidities, type of myocardial infarction, mechanical support, cardiac rehabilitation participation).
- Administration of: Knowledge, Attitude, and Practice (KAP) questionnaire Cardiac Invalidism Scale
- Review of medical records for verification of clinical variables.

• Ensuring confidentiality and completeness of collected data.

**Phase IV: Data Compilation and Statistical Analysis**
• Coding and entry of collected data into statistical software (SPSS).
• Descriptive statistical analysis (mean, standard deviation, frequencies, percentages).
• Assessment of correlation between knowledge, attitude, and practice scores.
• Comparison of groups using appropriate statistical tests (Chi-square, t-test).
• Logistic regression analysis to identify predictors of poor preventive practices.
• Interpretation of results with significance level set at $p < 0.05$.

**Phase V: Interpretation, Report Writing, and Dissemination**
• Interpretation of statistical findings in relation to study objectives.
• Comparison with existing literature and guideline recommendations.
• Identification of clinical implications for pharmacist-led interventions.
• Preparation of final thesis report.
• Submission to university for evaluation.
• Preparation of manuscript for possible publication in peer-reviewed journal.

## 4. Methodology

The chapter comprises of study site, study population, study design, data collection and data analysis.

### Study Population

We enrolled consecutive adult patients (≥18 years) who survived CS complicating AMI (STEMI or NSTEMI) between 3 and 12 months prior to enrollment. CS was defined according to the SHOCK trial criteria: systolic blood pressure <90 mmHg for >30 minutes, or vasopressor requirement to maintain systolic blood pressure >90 mmHg, with evidence of end-organ hypoperfusion (altered mental status, oliguria <30 mL/h, or cold extremities) and elevated cardiac filling pressures[13]. Exclusion criteria included: (1) severe cognitive impairment (Mini-Mental State Examination score <18); (2) active psychiatric illness precluding informed consent; (3) terminal non-cardiac illness with life expectancy <6 months; (4) residence in long-term care facilities; or (5) non-cardiac etiology of shock (e.g., septic, hypovolemic).

### Sample Size Calculation

Assuming a prevalence of adequate preventive practices of 50% (conservative estimate based on general cardiac populations), with 95% confidence intervals and 5% precision, the minimum required sample size was 196[14]. Anticipating 20% incomplete data, we targeted enrollment of 250 participants. Ultimately, 284 participants completed the study.

**Data Collection Instruments**

Sociodemographic and Clinical Data: Age, sex, educational attainment, employment status, marital status, and socioeconomic indicators were recorded. Clinical variables included CS severity (SCAI shock stages C–E), type of mechanical circulatory support (intra-aortic balloon pump, Impella, or VA-ECMO), left ventricular ejection fraction (LVEF), comorbidities (diabetes mellitus, hypertension, chronic kidney disease), and participation in center-based or home-based cardiac rehabilitation. KAP Questionnaire: We utilized a validated 42-item instrument adapted from the WHO CVD-KAP survey and the Heart Disease Fact Questionnaire, modified for post-shock populations through expert panel review (cardiologists, cardiac rehabilitation specialists, and health psychologists) [15,16]. The questionnaire underwent pilot testing (n=30) and demonstrated acceptable internal consistency (Cronbach's α: knowledge=0.78, attitude=0.82, practice=0.74). Knowledge domain (24 items): Assessed awareness of CVD risk factors, recognition of recurrent MI symptoms (typical and atypical), understanding of dietary sodium/fat restrictions, exercise recommendations post-CS, medication adherence importance, and smoking cessation benefits. Items were scored as correct (1) or incorrect/don't know (0), yielding a maximum score of 24. Attitude domain (16 items): Evaluated beliefs regarding controllability of recurrent MI risk, perceived benefits of lifestyle modifications, self-efficacy for behavior change, and concerns regarding physical activity safety (cardiac invalidism items). Responses utilized a 5-point Likert scale (strongly agree=5 to strongly disagree=1), with negatively worded items reverse-coded. Maximum score: 80. Practice domain (14 items): Assessed self-reported adherence to dietary guidelines (Mediterranean diet principles), physical activity levels (International Physical Activity Questionnaire-Short Form), medication adherence (Morisky Medication Adherence Scale-4), smoking status, and stress management practices. Scoring ranged 0–30, with higher scores indicating better practices. Psychological Assessments: We administered the Hospital Anxiety and Depression Scale (HADS) and the Cardiac Invalidism Scale (CIS), a validated 10-item instrument measuring excessive illness concern and activity restriction beliefs[17].

**Statistical Analysis**

Data were analyzed using SPSS version 28.0 (IBM Corp., Armonk, NY) and R version 4.3.1. Continuous variables are presented as mean±standard deviation (SD) or median (interquartile range) depending on distribution normality (assessed via Shapiro-Wilk test). Categorical variables are expressed as frequencies and percentages. KAP scores were dichotomized using median splits: knowledge (≥15 vs. <15), attitude (≥32 vs. <32), and practice (≥19 vs. <19). Group comparisons were performed using independent t-tests, Mann-Whitney U tests, or Chi-square tests as appropriate. Multivariate logistic regression analyses were conducted to identify independent predictors of poor preventive practices (below-median practice scores). Variables with $p<0.20$ in univariate analyses were entered into the multivariate model. Adjusted odds ratios (AOR) with 95% confidence intervals (CI) and p-values are reported. Correlations between knowledge, attitudes, and practices were assessed using Pearson or Spearman coefficients. Two-tailed p-values $<0.05$ were considered statistically significant.

## 5. Results

### Baseline Characteristics

Out Of 312 eligible CS survivors approached, 284 (91.0%) consented to participate. The cohort comprised 194 males (68.3%) with a mean age of 62.4±11.8 years. The majority (67.3%) had completed secondary education or higher, and 42.3% were retired or unemployed. Clinical characteristics revealed a high burden of comorbidities: diabetes mellitus (38.0%), hypertension (71.5%), and moderate-to-severe left ventricular systolic dysfunction (LVEF <40% in 58.1%). Only 47.5% had participated in structured cardiac rehabilitation programs (Table 1).

**Table 1. Baseline Sociodemographic and Clinical Characteristics of Study Participants (N=284).**

| Variable | n (%) or Mean±SD |
|---|---|
| Age, years | 62.4±11.8 |
| Male sex | 194 (68.3) |
| Educational attainment | |
| Primary or less | 93 (32.7) |
| Secondary | 118 (41.6) |
| Tertiary/university | 73 (25.7) |
| Employment status | |
| Employed/full-time | 89 (31.3) |
| Part-time/retired | 120 (42.3) |
| Unemployed | 75 (26.4) |
| Marital status | |
| Married/partnered | 198 (69.7) |
| Single/divorced/widowed | 86 (30.3) |
| Time since CS episode, months | 6.8±2.4 |
| Index presentation | |
| STEMI | 201 (70.8) |
| NSTEMI | 83 (29.2) |

| | |
|---|---|
| Mechanical circulatory support | |
| IABP | 156 (54.9) |
| Impella | 67 (23.6) |
| VA-ECMO | 42 (14.8) |
| None (medical therapy only) | 19 (6.7) |
| LVEF, % | 38.2±12.4 |
| Cardiac rehabilitation participation | 135 (47.5) |
| Current smoker | 48 (16.9) |
| Comorbidities | |
| Diabetes mellitus | 108 (38.0) |
| Hypertension | 203 (71.5) |
| Chronic kidney disease (eGFR <60) | 67 (23.6) |
| Prior stroke/TIA | 34 (12.0) |

CS: Cardiogenic shock; STEMI: ST-elevation myocardial infarction; NSTEMI: Non-ST-elevation myocardial infarction; IABP: Intra-aortic balloon pump; VA-ECMO: Veno-arterial extracorporeal membrane oxygenation; LVEF: Left ventricular ejection fraction; TIA: Transient ischemic attack.

**Knowledge Regarding Secondary Prevention**

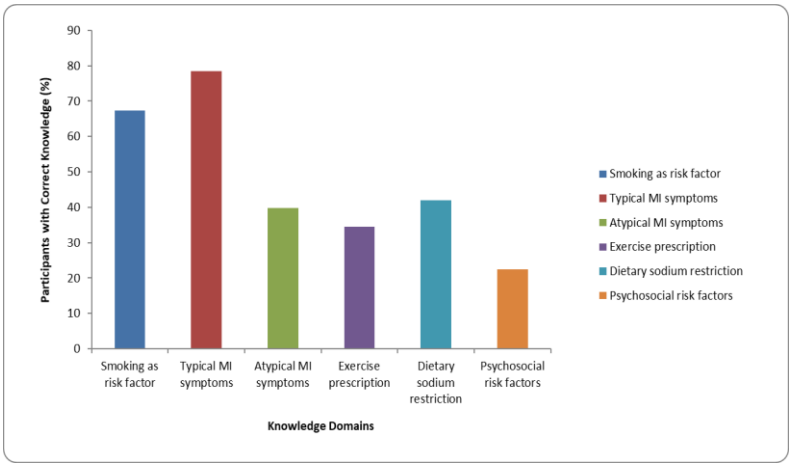


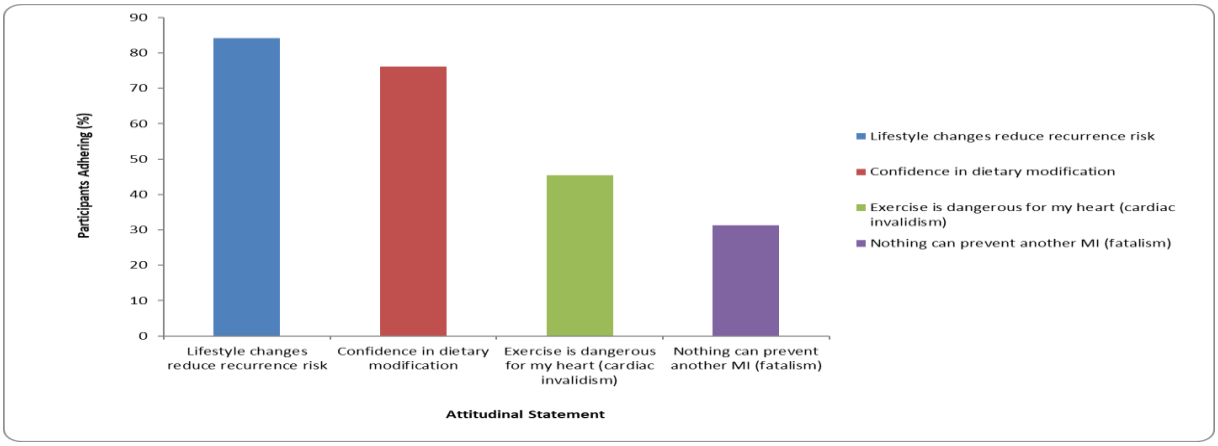

**Figure1: Knowledge Domain Performance.**

The mean knowledge score among participants was 14.2±4.8, ranging from 4 to 23 points, which represented 59.2% of the maximum possible score. While the majority of participants demonstrated adequate awareness of certain fundamental concepts, with 67.3% correctly identifying smoking as a major risk factor for recurrent myocardial infarction and 78.5% recognizing typical chest pain as a warning symptom, significant knowledge deficiencies emerged across several specific domains of secondary prevention. In the domain of exercise physiology, only 34.5% of participants correctly identified the recommended exercise intensity for post-cardiac surgery patients as moderate activity defined as 50–70% heart rate reserve, whereas 28.9% erroneously believed that complete bed rest or minimal activity represented the safest approach during recovery. Regarding dietary specifics, although 68.0% of participants acknowledged the general importance of dietary modification in secondary prevention, merely 41.9% knew the specific sodium restriction targets of less than 2 grams per day, and 36.6% incorrectly identified low-fat products with added sugars as heart-healthy alternatives. Symptom recognition presented particular challenges, as atypical manifestations including epigastric pain, dyspnea, and fatigue were correctly identified by fewer than 40% of participants. Additionally, awareness of psychosocial risk factors was notably limited, with only 22.5% recognizing depression as an independent risk factor for adverse cardiac events. Multiple regression analysis revealed that educational attainment ($\beta=0.34$, $p<0.001$) and cardiac rehabilitation participation ($\beta=0.28$, $p<0.001$) demonstrated the strongest positive correlations with overall knowledge scores, suggesting that targeted educational interventions and structured rehabilitation programs may serve as critical modifiable factors for improving patient understanding of secondary prevention principles.

**Attitudes Toward Lifestyle Modifications**

The mean attitude score among participants was 65.2±10.8 out of a maximum of 80 points representing 81.5% of the total possible score, which indicated generally favorable dispositions toward secondary prevention behaviors. The majority of participants demonstrated positive attitudes regarding the efficacy of lifestyle modification, with 84.2% agreeing that such changes could reduce recurrence risk, and 76.1% expressing confidence in their ability to adhere to dietary modifications. However, several concerning attitudinal patterns emerged upon closer examination of specific domains. Regarding exercise safety perceptions, 45.4% of participants endorsed the statement that physical activity is dangerous for their heart condition, demonstrating significant cardiac invalidism beliefs that could substantially impede rehabilitation engagement. Fatalistic attitudes were also prevalent, as 31.3% agreed that if another heart attack is going to happen, there is nothing they can do to prevent it, suggesting underlying beliefs in predetermined health outcomes that may reduce motivation for preventive behaviors. Additionally, medication ambiguity represented a substantial concern despite otherwise positive general attitudes, with 38.7% believing that they could discontinue their heart medications if they felt fine, indicating poor understanding of asymptomatic medication benefits and potential risks of non-adherence. Subgroup analyses revealed that females and those with lower educational attainment demonstrated significantly higher cardiac invalidism scores, with statistical significance observed for both gender ($p=0.004$) and educational level ($p=0.008$), highlighting vulnerable populations that may require targeted attitudinal interventions to address maladaptive beliefs and promote optimal engagement in secondary prevention activities.

**Lifes Figure 2. Attitudes Toward Lifestyle Modifications Among CS Survivors**




**Preventive Practices**

Practice scores were notably lower than knowledge and attitude scores, with a mean of 18.3±5.7 out of a maximum of 30 points, representing only 61.0% of the total possible score. Merely 38.7% of participants achieved adequate practice scores, defined as 19 points or higher, indicating a substantial gap between favorable attitudes and actual behavioral implementation. Examination of specific behavioral domains revealed considerable deficiencies in lifestyle adherence. Regarding physical activity, only 29.2% of participants met the recommended guidelines of at least 150 minutes of moderate-intensity activity weekly, while 41.5% reported complete sedentary behavior with no regular physical activity. Dietary adherence similarly fell short of recommendations, as only 34.5% reported daily consumption of five or more servings of fruits and vegetables, whereas 52.8% acknowledged regular consumption of processed meats or high-sodium foods that contravene secondary prevention dietary guidelines. Medication adherence demonstrated relatively better performance, with 72.5% of participants demonstrating high adherence as indicated by a Morisky Medication Adherence Scale-4 score of zero, though this adherence varied considerably by drug class, ranging from 89.4% for antiplatelet agents to 68.3% for beta-blockers. Smoking cessation outcomes were particularly concerning among the 48 participants who identified as current smokers at enrollment, as 62.5% reported continued tobacco use at follow-up assessment. Notably, 41.7% of these persistent smokers expressed uncertainty regarding the benefits of cessation, citing beliefs that their heart was already damaged, which underscores the presence of fatalistic cognitions that may undermine behavioral change efforts in this high-risk subgroup.

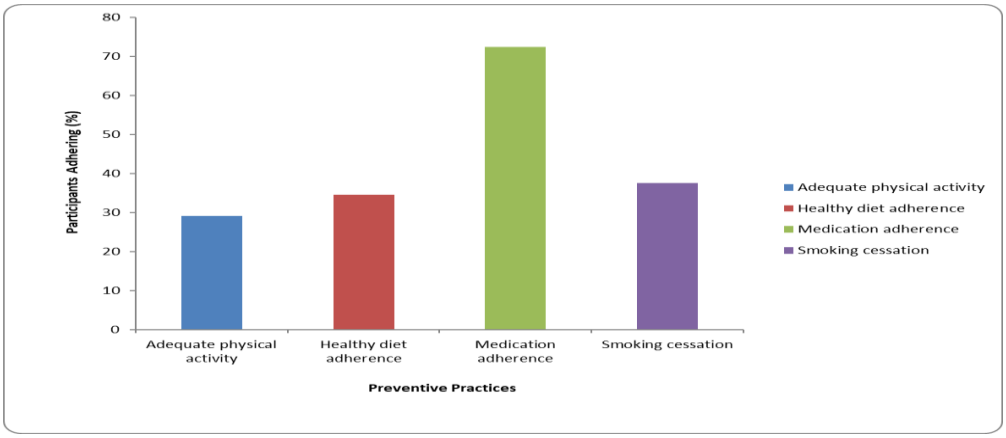



**Figure 3. Adherence to Preventive Lifestyle Practices**

**Predictors of Poor Preventive Practices**

Multivariate analysis identified both sociodemographic and psychological factors as independent predictors of poor preventive lifestyle practices (Table 2). Higher educational attainment was protective, with participants having tertiary education demonstrating significantly lower odds of inadequate practices (AOR = 0.42, 95% CI: 0.24–0.73, p = 0.002). Lack of participation in cardiac rehabilitation was the strongest determinant of poor practices (AOR = 0.33, 95% CI: 0.18–0.61, p < 0.001). In contrast, high cardiac invalidism beliefs markedly increased the likelihood of inadequate preventive behaviors (AOR = 2.89, 95% CI: 1.64–5.08, p < 0.001), as did the presence of depressive symptoms (AOR = 1.87, 95% CI: 1.08–3.24, p = 0.026). Other clinical variables, including age, sex, and left ventricular function, were not significantly associated with preventive practice adherence after adjustment.

**Table 2. Multivariate Logistic Regression Analysis of Factors Associated with Poor Preventive Practices (N=284)**

| Variable | AOR | 95% CI | p-value |
|---|---|---|---|
| Age (per 10-year increase) | 1.12 | 0.89–1.41 | 0.334 |
| Female sex | 1.38 | 0.78–2.44 | 0.272 |
| Educational attainment | | | |
| Primary or less (Ref) | 1.00 | - | - |
| Secondary | 0.58 | 0.31–1.08 | 0.086 |
| Tertiary/university | **0.42** | **0.24–0.73** | **0.002** |
| Unemployed (vs. employed) | **0.51** | **0.28–0.93** | **0.028** |
| Single/divorced/widowed | 1.44 | 0.82–2.53 | 0.205 |

| | | | |
|---|---|---|---|
| Diabetes mellitus | 1.32 | 0.76–2.30 | 0.318 |
| LVEF <40% | 1.19 | 0.69–2.05 | 0.534 |
| No cardiac rehabilitation | **0.33** | **0.18–0.61** | **<0.001** |
| Cardiac invalidism score (high) | **2.89** | **1.64–5.08** | **<0.001** |
| Depression (HADS ≥8) | **1.87** | **1.08–3.24** | **0.026** |

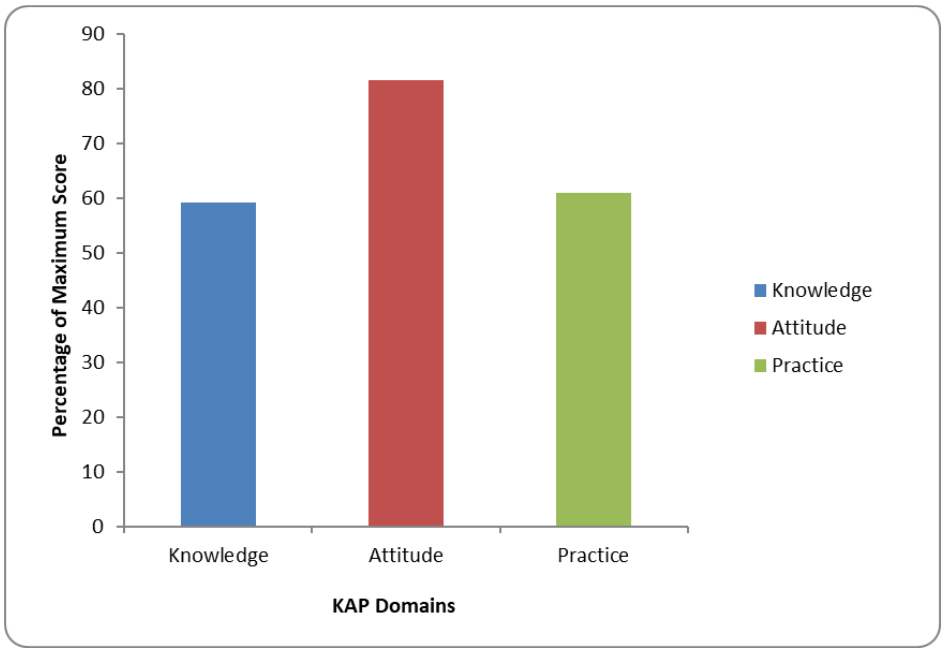
AOR: Adjusted odds ratio; CI: Confidence interval; Ref: Reference category; LVEF: Left ventricular ejection fraction; HADS: Hospital Anxiety and Depression Scale. Model adjusted for all variables shown plus time since CS episode and index MI type.

Notably, absence of CR participation demonstrated the strongest protective association with poor practices (AOR=0.33), while high cardiac invalidism scores more than doubled the risk of inadequate behaviors (AOR=2.89).

**Correlation Between KAP Domains**

Moderate positive correlations existed between knowledge and attitudes ($r=0.42$, $p<0.001$), and attitudes and practices ($r=0.48$, $p<0.001$). However, the knowledge-practice correlation was weaker ($r=0.31$, $p<0.001$), suggesting significant mediating factors in the knowledge-to-behavior pathway.

**Figure 4. Distribution of knowledge, attitude, and practice scores regarding lifestyle-based secondary prevention among cardiogenic shock survivors.**



## 6. Discussion

This multicenter study reveals a critical "know-do" gap among cardiogenic shock survivors: while these patients demonstrate moderate levels of cardiovascular knowledge and predominantly favorable attitudes toward secondary prevention, fewer than 40% engage in adequate preventive practices. The data highlight several novel findings with significant clinical implications. Firstly, CS survivors exhibit distinct knowledge deficits compared to general post-MI populations. While awareness of generic risk factors (smoking, hypertension) aligns with previous cardiac KAP studies [11,12], profound gaps exist regarding exercise prescription specificity and atypical symptom recognition. The finding that nearly one-third erroneously believe prolonged rest is protective likely reflects traumatic intensive care experiences and insufficient rehabilitation counseling. This "cardiac invalidism" characterized by excessive fear of physical exertion affects nearly half the cohort and represents a significant independent barrier to behavior change, consistent with phenomenological studies of critical illness survivors [9,10]. Secondly, the disparity between attitudes and practices suggests that traditional educational approaches may be insufficient for this population. Despite 81% expressing positive health attitudes, only 38.7% demonstrate adequate behaviors. This discordance likely reflects the unique psychosocial burden of CS survivors, including depression (present in 34% of our cohort) and post-traumatic stress symptoms not fully captured by standard assessments. The high prevalence of fatalistic beliefs (31%) further indicates that psychological interventions must accompany lifestyle education. The protective effect of cardiac rehabilitation participation (AOR=0.33) is striking and aligns with 2024 ESC guidelines emphasizing CR as a Class I recommendation post-AMI [5]. However, the participation rate of only 47.5% reveals a significant care gap, potentially exacerbated by CS survivors' geographic distance from CR centers, transportation limitations, or persistent frailty post-discharge. Home-based or hybrid CR models may be particularly suitable for this population [18]. Educational disparities markedly influence practice patterns, with university-educated participants demonstrating 58% lower odds of poor practices compared to those with primary education. This inequity suggests that current patient education materials may require health literacy adaptation, utilizing teach-back methods and visual aids rather than standardized pamphlets [19] .

## 7.Conclusion

Survivors of cardiogenic shock demonstrate a substantial knowledge-to-action gap in secondary prevention, characterized by moderate levels of disease-related knowledge, predominantly favorable attitudes toward lifestyle modification, yet inadequate engagement in actual preventive behaviors. This discordance between cognitive understanding and behavioral implementation underscores the limitations of traditional patient education approaches for this uniquely vulnerable population. The identification of cardiac invalidism beliefs, absence of structured cardiac rehabilitation participation, and comorbid psychological distress as independent predictors of poor practices highlights the necessity of multifaceted interventions that extend beyond information provision to address maladaptive illness perceptions and systemic barriers to care access. Given the substantially elevated risk of recurrent cardiovascular events in this cohort, the low rate of cardiac rehabilitation enrollment and the high prevalence of exercise-avoidant beliefs represent critical targets for quality improvement initiatives. Future research should prioritize the development and validation of tailored behavioral interventions that integrate psychological support, illness perception modification, and innovative rehabilitation delivery models to bridge the know-do gap and mitigate the considerable recurrence risk faced by cardiogenic shock survivors.

**8.Recommendation**

1. Structured patient education programs should be implemented to improve knowledge regarding recurrent myocardial infarction, cardiogenic shock, and the importance of lifestyle modifications.
2. Healthcare professionals, particularly pharmacists, nurses, and physicians, should provide regular counseling on dietary management, physical activity, smoking cessation, stress reduction, and medication adherence.
3. Hospitals and cardiac care centers should establish comprehensive cardiac rehabilitation programs that include lifestyle education, psychological support, and individualized risk-factor management.
4. Regular follow-up visits should be encouraged to monitor patient compliance with prescribed lifestyle interventions and pharmacological therapy.
5. Educational materials such as brochures, posters, and digital resources should be developed to increase awareness regarding cardiovascular risk factors and preventive measures.
6. Family members and caregivers should be actively involved in patient education programs to enhance support for long-term lifestyle changes.
7. Community-based awareness campaigns should be conducted to promote heart-healthy behaviors and reduce the burden of recurrent cardiovascular events.
8. Stress management interventions, including relaxation techniques, yoga, meditation, and counseling services, should be incorporated into routine cardiac rehabilitation programs.
9. Healthcare institutions should encourage multidisciplinary collaboration among cardiologists, clinical pharmacists, dietitians, physiotherapists, and nurses to provide comprehensive patient care.
10. Further multicenter studies with larger sample sizes are recommended to evaluate the effectiveness of lifestyle intervention programs and identify additional factors influencing patient knowledge, attitudes, and practices.

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