



# Effectiveness of a structured awareness session in improving cardiovascular health literacy and emergency preparedness among students: A survey-based study

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## Abstract

**Background:** Cardiovascular diseases (CVDs) are a major health concern globally, including among young adults who often underestimate their risk. Biotechnology students, given their scientific background, are an important audience for cardiovascular education. In addition to long-term prevention, early recognition of cardiac arrest and prompt initiation of life-saving measures (such as CPR and activating emergency medical services) are critical determinants of survival. However, misconceptions about cardiac arrest and heart attack remain widespread in the general community, leading to delays in emergency department presentation. This study evaluated the immediate impact of a World Heart Day session titled “Don’t Miss a Beat” on improving cardiovascular health literacy, awareness of cardiac emergencies, and lifestyle modification intentions among biotechnology students and professors.

**Key words:** Cardiovascular risk factors; Screen time; Stress reduction; Awareness session

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## 1. Methods

The educational content was structured with dual emphasis:

1. Preventive aspects – lifestyle modification, annual health checkups, stress and sleep hygiene.
2. Emergency medicine aspects – distinction between heart attack and cardiac arrest, recognition of time-critical symptoms, and the importance of immediate emergency response (activating EMS, CPR awareness).

The quiz assessed knowledge regarding heart attack vs cardiac arrest, cardiovascular risk factors, stress, sleep habits, physical activity, intent to adopt heart-healthy behaviours, and retention of key emergency recognition messages. Data are reported as percentages and approximate counts where relevant.

## 2. Results

### 2.1. Participant Demographics

Total participants: 100 (all female students and 11% professors).

Quiz participants: 50 (representative sample of total group).

Age distribution (quiz respondents): 33% aged 16–18 years, 60% aged 19–21 years, 8% aged 22+ years.

Academic level: 67% undergraduates, 30% postgraduates (among total group).

### 2.2. Cardiovascular Risk Awareness

Family history of heart disease: 38% present, 57% no history, 5% unsure.

Recognition of risk factors (percent selecting each):

- High blood pressure/-High cholesterol: 79%
- Smoking: 31%
- Lack of physical activity: 43%
- Poor diet: 33%

Regarding the misconception that heart attacks only happen to older people, 98% correctly answered “False.”

## 3. Lifestyle and Behaviour

**Exercise frequency:** 46% never exercise, 26% exercised occasionally, 13% exercised 5+ days/week, 15% exercised less than 5 days/week.

**Sleep duration:** 50% reported 7–8 hours per night. Most critical long-term habits ranked were managing stress (25%), consistent sleep (25%), daily exercise (17%), and healthier eating (21%).

**Screen time:** 72% reported spending over 2 hours per day on devices.

## 4. Stress and Mental Health

63% reported “almost always” experiencing stress, 26% rarely or never.

## 5. Behavioural Intentions Following the Session

87% indicated intention to make at least one positive lifestyle change. Planned changes included stress reduction (72%), increased physical activity (60%), healthier diet (46%), and less sedentary time (22%).

## 6. Key Takeaways

Most memorable concepts: stress-heart health link (60%), universal risk of heart disease (54%), importance of diet and exercise (38%).

Most convincing messages: heart-lifestyle connection (58%), recognizing cardiac arrest (56%), heart-brain connection (50%).

56% of participants reported that recognizing the difference between cardiac arrest and a heart attack was among the most convincing messages they retained, highlighting improved literacy in time-critical emergencies.

Emergency Preparedness: Although CPR training was not part of the session, several participants expressed interest in learning CPR in the future, suggesting spillover impact toward community emergency readiness.

## 7. Discussion

The majority-female participant group demonstrated strong baseline knowledge of cardiovascular risk but also acknowledged significant stress and lifestyle challenges. The session effectively improved awareness and motivated participants to adopt new behaviors. Importantly, students reported improved clarity in distinguishing between cardiac arrest and heart attack. Misinterpretation of these conditions often contributes to pre-hospital delays and poor outcomes. By reinforcing the role of immediate recognition and emergency response, such sessions contribute to community preparedness in cardiac emergencies. From an Emergency Medicine perspective, enhancing public literacy not only reduces avoidable emergency department presentations through lifestyle prevention but also improves survival in time-critical emergencies. Increased willingness to adopt preventive health behaviors and greater understanding of cardiac arrest recognition translate into better bystander response rates, earlier EMS activation, and improved chain of survival. The involvement of professors (11%) adds depth to the community-based approach. The results support the value of structured educational sessions in increasing cardiovascular health literacy among students, who are well-positioned to advocate for both preventive health and emergency preparedness in their future careers.

## 8. Conclusion

The “Don’t Miss a Beat” structured awareness session successfully enhanced cardiovascular health literacy, clarified misconceptions, and inspired positive behavioural intentions in students and faculty. By embedding key concepts — particularly recognition of cardiac arrest, the need for immediate action, and the importance of annual checkups to reduce preventable ED presentations — the intervention highlights the dual role of education in both prevention and acute emergency response. Scaling similar interventions could significantly improve preventive cardiovascular health behaviours and strengthen community preparedness for cardiac emergencies.