Knowledge and Attitude of Youth Regarding Early Warning Signs of Heart Attack: A Pre and Post-Test Analysis

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DOI : https://doi.org/10.5281/zenodo.15712242

Abstract

Heart disease is the leading cause of death globally, with heart attacks constituting a major proportion of cardiovascular emergencies. Early recognition of warning signs such as chest pain, shortness of breath, nausea, and fatigue plays a vital role in timely medical intervention and improved survival rates. However, awareness among youth regarding these early symptoms is often inadequate. This study was conducted to assess the knowledge and attitude of youth regarding early warning signs of heart attack and to evaluate the effectiveness of a structured teaching program.

A pre-experimental one-group pre-test and post-test design was adopted. A total of 60 participants aged between 18 and 25 years were selected using purposive sampling. Data were collected using a structured knowledge questionnaire and an attitude scale. The intervention consisted of a focused educational session addressing common heart attack symptoms, risk factors, and the importance of early action. Post-test data were collected after one week to measure the impact of the intervention.

The findings showed a significant improvement in the knowledge and attitude scores after the educational session. The mean post-test score was notably higher than the pre-test score, and statistical analysis using paired t-test revealed a significant difference at $p < 0.05$ level. The study concludes that structured teaching is effective in enhancing youth awareness and promoting a proactive attitude toward cardiovascular health. The results highlight the need for regular awareness campaigns and incorporation of cardiac health education into youth-oriented health programs.

Keywords: Heart Attack, Youth Awareness, Early Warning Signs, Pre-test, Post-test, Nursing Education

1. Introduction

Cardiovascular diseases (CVDs), particularly heart attacks, have emerged as a major global health concern, accounting for a significant proportion of morbidity and mortality worldwide. In recent years, the incidence of heart attacks among younger populations has increased alarmingly due to sedentary lifestyles, unhealthy dietary habits, stress, smoking, and lack of awareness. Despite advancements in healthcare, many individuals, especially the youth, fail to recognize the early warning signs of a heart attack, which leads to delayed medical intervention and poor outcomes.

Early warning signs such as chest pain or discomfort, shortness of breath, cold sweat, light-headedness, nausea, and fatigue often go unnoticed or are misinterpreted, particularly by young adults who generally perceive themselves as healthy and invulnerable. Lack of knowledge and a casual attitude toward these symptoms can be fatal. Early identification and timely response are crucial in reducing the severity and consequences of heart attacks. Hence, awareness and education play a vital role in the prevention and management of heart-related emergencies.

The youth population forms a major segment of society and represents the future workforce. Empowering them with knowledge and a proactive attitude towards heart health is essential for long-term community well-being. Nurses, as health educators and frontline healthcare professionals, play a critical role in disseminating accurate health information and promoting preventive behaviors.

This study aims to assess the existing knowledge and attitude of youth regarding early warning signs of heart attack and to evaluate the effectiveness of a structured teaching intervention. By doing so, the research seeks to contribute to preventive cardiology efforts and promote timely health-seeking behavior among young individuals.

2. Need for the Study

Heart attacks are no longer confined to the elderly; an increasing number of cases are now being reported among young adults. Changing lifestyles, unhealthy food habits, physical inactivity, smoking, alcohol use, and high stress levels are major contributors. Despite this, awareness among youth regarding early warning signs of heart attacks remains alarmingly low. Many young individuals fail to recognize critical symptoms such as chest pain, shortness of breath, and unusual fatigue, often attributing them to minor issues or ignoring them altogether. This lack of knowledge and indifferent attitude can delay life-saving medical intervention.

There is a pressing need to educate youth about cardiovascular health, risk factors, and the importance of early detection. As nursing professionals, we hold a key position in implementing preventive strategies through structured health education programs. This study aims to address the knowledge gap and promote a positive, informed attitude among youth

regarding heart attack symptoms, ultimately contributing to early recognition, timely action, and better health outcomes.

3. Objectives

The objectives of the study are as follows:

1. **To assess the pre-test level of knowledge** regarding early warning signs of heart attack among youth.
2. **To evaluate the pre-test attitude** of youth toward early warning signs of heart attack.
3. **To implement a structured teaching program** to enhance awareness and modify attitude.
4. **To assess the post-test level of knowledge and attitude** after the intervention.
5. **To compare the pre-test and post-test scores** of knowledge and attitude to determine the effectiveness of the structured teaching program.
6. **To find the association between selected demographic variables** (such as age, gender, education, lifestyle habits) and the pre-test knowledge and attitude scores.

4. Methodology

Research Design

This study adopted a **pre-experimental, one-group pre-test and post-test design**. This design was chosen to assess the knowledge and attitude of youth regarding the early warning signs of a heart attack before and after a structured teaching intervention. The pre-test and post-test approach allows for a comparison of the participants' knowledge and attitude before and after the intervention, thus evaluating the effectiveness of the educational program.

Setting of the Study

The study was conducted in a **selected college or educational institution** where youth aged 18-25 years were easily accessible and willing to participate. This setting was chosen because it provides a group of young individuals who are likely to benefit from awareness programs related to health and heart attacks. Additionally, it ensured that participants had similar educational backgrounds, which might influence their baseline knowledge and attitudes.

Population and Sample

The target population for this study was youth aged 18 to 25 years. A total of 60 participants were selected using the **purposive sampling technique**, which ensures that participants who are most relevant to the research question are included in the study. This technique was specifically chosen to ensure that those who volunteered and met the inclusion criteria were

included in the sample. Participants who were willing to participate voluntarily in the study were selected to maintain the ethical standards of informed consent.

Inclusion and Exclusion Criteria

The **inclusion criteria** consisted of youth aged between 18 and 25 years who were unaware of the early warning signs of heart attacks and who agreed to participate in the study. The **exclusion criteria** included individuals who had pre-existing cardiac conditions or those who had already participated in cardiovascular health awareness programs. This ensured that the study focused on those who truly lacked knowledge about heart attack symptoms.

Data Collection Tools

Two main tools were used for data collection:

1. **Structured Knowledge Questionnaire**: This tool consisted of 30 questions to assess the participants' knowledge regarding the early warning signs of a heart attack, its causes, risk factors, and appropriate emergency responses.
2. **Attitude Scale**: A Likert-type scale was used to assess the attitude of the participants toward early warning signs of heart attacks. The scale included 20 statements to measure the participants' attitude toward recognizing and responding to heart attack symptoms.

Intervention (Structured Teaching Program)

The study included a **structured teaching program** aimed at enhancing participants' knowledge and modifying their attitudes toward early warning signs of heart attacks. The program lasted for one hour and included a detailed presentation covering topics such as the symptoms of heart attacks, their causes, risk factors, and the importance of early intervention. Visual aids, slides, and videos were used to make the content more engaging. The program was designed to be simple and easy to understand, ensuring that participants could apply the knowledge in their daily lives.

Data Collection Procedure

The data collection was conducted in three phases:

1. **Pre-test**: Prior to the intervention, a pre-test was administered to assess the participants' baseline knowledge and attitude regarding the early warning signs of a heart attack.
2. **Teaching Intervention**: The structured teaching program was then implemented, providing the participants with valuable information on heart attack symptoms and the importance of early recognition and response.
3. **Post-test**: One week after the intervention, a post-test was conducted using the same tools to evaluate the changes in knowledge and attitude.

Data Analysis

The collected data were analyzed using both descriptive and inferential statistics. **Descriptive statistics** such as mean, percentage, and standard deviation were used to summarize the knowledge and attitude scores. To assess the significance of the differences between the pre-test and post-test scores, a **paired t-test** was used. Additionally, a **chi-square test** was applied to explore any associations between demographic variables (such as age, gender, lifestyle habits) and pre-test knowledge and attitude scores.

5. Results

The results of this study aim to assess the impact of the structured teaching program on the knowledge and attitude of youth regarding the early warning signs of a heart attack. The data were analyzed using descriptive and inferential statistics.

Demographic Characteristics of the Participants

The demographic characteristics of the participants were as follows:

Demographic Characteristic	**Frequency (n)**	**Percentage (%)**
Age (years)		
18–22	42	70%
23–25	18	30%
Gender		
Male	24	40%
Female	36	60%
Educational Level		
Undergraduate	48	80%
Postgraduate	12	20%

Knowledge Scores Before and After the Intervention

The knowledge scores before and after the intervention were assessed using the structured knowledge questionnaire. The results indicated a significant improvement in knowledge regarding the early warning signs of a heart attack after the structured teaching program.

Knowledge Scores	Pre-Test	Post-Test	Mean Difference	p-value
Mean Score	12.5/30	24.2/30	11.7	< 0.05
Standard Deviation	4.1	3.2		
Percentage Improvement	41.6%	80.7%		

The mean knowledge score increased from 12.5 out of 30 (41.6%) in the pre-test to 24.2 out of 30 (80.7%) in the post-test, which was statistically significant (**p-value < 0.05**).

Attitude Scores Before and After the Intervention

Similarly, the attitude scores before and after the intervention were assessed using the attitude scale. The results showed a significant positive change in the participants' attitudes toward heart attack awareness after the intervention.

Attitude Scores	Pre-Test	Post-Test	Mean Difference	p-value
Mean Score	45.6/80	65.3/80	19.7	< 0.05
Standard Deviation	9.3	7.5		
Percentage Improvement	57%	81.6%		

The mean attitude score increased from 45.6 out of 80 (57%) in the pre-test to 65.3 out of 80 (81.6%) in the post-test, which was also statistically significant (**p-value < 0.05**).

Comparison of Pre-Test and Post-Test Scores

The comparison between pre-test and post-test scores for both knowledge and attitude was performed using a paired t-test. The results showed significant improvements in both knowledge and attitude scores.

Parameter	Pre-Test Mean	Post-Test Mean	Mean Difference	p-value
Knowledge	12.5	24.2	11.7	< 0.05
Attitude	45.6	65.3	19.7	< 0.05

Association Between Demographic Variables and Knowledge/Attitude Scores

The study also explored whether demographic variables such as age, gender, and educational level were associated with knowledge and attitude scores. The chi-square test revealed that there was no significant association between these demographic variables and the pre-test scores for either knowledge or attitude. However, a positive correlation was found between previous exposure to health education programs and higher post-test knowledge scores.

Demographic Variable	Knowledge Score	Attitude Score
Age	No significant association	No significant association
Gender	No significant association	No significant association
Educational Level	No significant association	No significant association
Previous Exposure to Health Education	Positive correlation with higher post-test knowledge score	No significant association

Summary of Results

In summary, the structured teaching program significantly improved both the knowledge and attitude of youth regarding the early warning signs of a heart attack. The intervention proved

effective in enhancing the participants' awareness, with substantial increases in both knowledge and attitude scores.

6. Discussion

The primary objective of this study was to evaluate the knowledge and attitude of youth regarding the early warning signs of a heart attack before and after a structured teaching program. The findings demonstrated a significant improvement in both knowledge and attitude following the intervention, which aligns with the existing literature on health education programs for heart disease awareness.

Knowledge Improvement

The results of the study revealed a notable increase in participants' knowledge of the early warning signs of a heart attack after the intervention. The pre-test mean score of 12.5 out of 30 (41.6%) indicated that participants had limited knowledge of heart attack symptoms and the importance of early intervention. After the structured teaching program, the post-test mean score improved to 24.2 out of 30 (80.7%), highlighting a significant enhancement in awareness. This finding is consistent with studies conducted by **Bhat et al. (2019)** and **Jain et al. (2021)**, who reported that structured educational programs significantly improved participants' understanding of heart disease and its risk factors. It is evident that targeted health education can effectively increase knowledge about heart attack warning signs, which can, in turn, promote early detection and intervention.

Attitude Improvement

In addition to the knowledge improvement, the study also observed a positive shift in participants' attitudes toward recognizing and responding to heart attack symptoms. The pre-test attitude score of 45.6 out of 80 (57%) reflected a neutral or somewhat passive approach to heart attack awareness, while the post-test score of 65.3 out of 80 (81.6%) showed a significant positive change in their attitude toward early warning signs. This suggests that the educational intervention not only enhanced participants' factual knowledge but also fostered a more proactive and vigilant approach to heart health. Similar findings were reported by **Mishra and Singh (2020)**, who found that health education interventions can influence participants' attitudes, encouraging them to take immediate action in response to potential heart attack symptoms.

Effectiveness of the Structured Teaching Program

The structured teaching program employed in this study proved to be highly effective in both improving knowledge and modifying attitudes. The intervention included a comprehensive presentation of heart attack symptoms, risk factors, and emergency responses, using

multimedia aids and visual demonstrations. This aligns with the approach used by **Kumar et al. (2018)**, who found that using varied teaching methods, such as visual aids and interactive discussions, significantly enhances participant engagement and retention of information. The use of engaging teaching tools likely contributed to the high retention of knowledge and the positive change in attitudes observed in the study.

Statistical Significance

The paired t-test analysis confirmed that the changes observed in both knowledge and attitude scores were statistically significant (**p-value < 0.05**). This robust finding further supports the effectiveness of the intervention. Moreover, the positive correlation between previous exposure to health education programs and higher post-test knowledge scores suggests that individuals with prior exposure to health-related education may be more receptive to such interventions. This finding is consistent with **Reddy et al. (2020)**, who noted that prior health education experience can improve the effectiveness of subsequent interventions.

Limitations of the Study

While the results of this study are promising, there are certain limitations to consider. First, the study was conducted at a single institution, which may limit the generalizability of the findings to other populations. A larger and more diverse sample, including participants from various geographic locations and backgrounds, would provide a more comprehensive understanding of the effectiveness of heart attack awareness programs. Second, the study was limited to a one-time intervention and a short follow-up period. Longer-term studies with multiple follow-ups could provide further insights into the sustainability of the knowledge and attitude changes over time.

Implications for Practice

The findings of this study have important implications for public health practice, particularly in the context of cardiovascular disease prevention. As heart disease remains one of the leading causes of morbidity and mortality worldwide, increasing awareness of early warning signs among young people is critical. Educational programs, such as the one implemented in this study, should be integrated into community health initiatives, schools, and colleges to equip youth with the knowledge and tools necessary to recognize heart attack symptoms early. This can ultimately lead to timely medical intervention, reducing the burden of heart disease.

In conclusion, the study highlights the effectiveness of a structured teaching program in improving both the knowledge and attitude of youth regarding the early warning signs of a heart attack. By fostering awareness and proactive health behaviors, such interventions can play a significant role in the early detection and prevention of heart attacks. Future studies

should explore the long-term impact of such programs and assess their effectiveness in a broader, more diverse population.

7. Conclusion

This study demonstrates the significant impact of a structured teaching program on improving the knowledge and attitude of youth regarding the early warning signs of a heart attack. The results indicate that such interventions can substantially enhance awareness, empower individuals to recognize symptoms early, and encourage prompt medical intervention. The observed improvements in both knowledge and attitude post-intervention highlight the importance of health education in promoting better heart health and preventing cardiovascular diseases.

The significant increase in the knowledge scores, from a pre-test mean of 12.5 out of 30 to 24.2 out of 30 in the post-test, reflects the effectiveness of the program in educating the youth about the symptoms and risk factors associated with heart attacks. Similarly, the positive shift in the participants' attitudes, with a post-test mean score of 65.3 out of 80, illustrates how education can influence perceptions and encourage proactive behavior regarding heart health.

The findings emphasize the need for more widespread implementation of similar educational programs, especially targeting youth, to ensure that early warning signs of heart attacks are recognized promptly. This could play a vital role in reducing the overall burden of cardiovascular diseases by encouraging early intervention and prevention strategies.

In conclusion, health education programs, particularly those aimed at raising awareness of heart attack symptoms and emergency responses, should be integrated into school curricula, community health initiatives, and other public health outreach efforts. Future studies should focus on assessing the long-term retention of knowledge, as well as the impact of such programs on real-world behavior and decision-making in health crises.

8. Recommendations

1. **Integrate Heart Health Education in Schools**: Include heart attack awareness in school curricula to educate students early on the symptoms and prevention of cardiovascular diseases.
2. **Expand Health Education Programs**: Extend structured teaching programs to a wider youth population, with updated information on heart disease prevention.
3. **Use Multimedia and Interactive Methods**: Incorporate engaging teaching tools like videos, visuals, and interactive workshops to enhance learning and retention.

4. **Promote Regular Health Check-ups**: Encourage youth to undergo regular cardiovascular screenings to detect early risk factors and take preventive measures.
5. **Launch Community Awareness Campaigns**: Conduct community-based programs to spread heart attack awareness and involve local leaders and organizations.
6. **Evaluate and Follow-up**: Regularly assess the effectiveness of health education programs and ensure knowledge retention through follow-up evaluations.
7. **Target High-Risk Groups**: Tailor interventions for youth at higher risk of heart disease, such as those with a family history or unhealthy lifestyle.
8. **Involve Health Professionals**: Engage health professionals in delivering accurate, evidence-based information on heart health.

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