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# Preventive Insights: The Role of Education in Enhancing Hypertension Patients' Knowledge on Heart Disease

**Marwan Hatem Al-Obaidy[1], Zhian Abdulah[2], Pichayaporn Ratti[3]**
[1]Department of Public Health, College of Veterinary Medicine, University of Kirkuk, Kirkuk, Iraq
[2]Nursing Department, Hawler Medical University-Erbil, Kurdistan Region, Iraq
[3]Department of Dental Public Health, Sirindhorn College of Public Health Yala, Yala, Thailand

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**ABSTRACT**

**Purpose of the study:** The purpose of this study was to determine the effect of health education on the level of knowledge of people with hypertension about the risk factors for coronary heart disease.

**Methodology:** The research design used is pre-experimental design with one group pre-post test design approach. The population of the study was 63 respondents. Sampling using random sampling. The sample was 39 respondents. The variables used are 2 variables, namely the independent variable with health education and the dependent variable with the level of knowledge. Data collection using a questionnaire. Statistical analysis using Wilcoxon with a significance level of 0.05.

**Main Findings:** The results of the study showed that 22 respondents (56.41%) had insufficient knowledge before being given health education. After being given health education, 21 respondents (52.85%) had good knowledge. The p value = 0.000 ≤ α = 0.05 was obtained so that Ha was accepted.

**Novelty/Originality of this study:** This study provides novelty by proving that structured health education interventions are able to increase the knowledge of hypertension sufferers about coronary heart disease, which has the potential to encourage earlier prevention at the community level.



***Corresponding Author:***
Marwan Hatem Al-Obaidy
Department of public health, College of veterinary medicine, University of Kirkuk, Baghdad Road, Kirkuk, Iraq.
Email: mrhatemob41@gmail.com

## 1. INTRODUCTION

Coronary heart disease is a serious disorder caused by blockage of the coronary arteries, which limits blood flow to the heart [1], [2]. This condition causes the heart muscle to lack the oxygen and nutrients needed to function optimally. Coronary heart disease is a chronic disease that is difficult to cure and requires regular treatment and close monitoring by medical personnel [3], [4]. Maintaining heart health is very important because this organ functions throughout human life [5], [6]. Therefore, prevention and treatment of heart disease must be a priority in the public health system.

The problem that arises in society today is the lack of knowledge about the factors that cause coronary heart disease. The low level of public understanding has an impact on unhealthy behavior patterns, such as smoking, consuming high-fat foods, and lack of physical activity [7], [8]. This ignorance contributes to the increasing prevalence of Coronary Heart Disease in various regions [9], [10]. In fact, many risk factors can be controlled if the community has adequate information [11], [12]. Therefore, health education plays an important role in reducing the incidence of Coronary Heart Disease.

The phenomenon that occurs shows that many people are not aware of their risk of coronary heart disease [13], [14]. This ignorance causes early symptoms to often be ignored until the condition becomes severe. Lack of awareness of risk factors such as hypertension, stress, and poor diet causes this disease to develop unknowingly [15], [16]. As a result, many individuals only realize their condition after experiencing serious complications. This shows the need for education-based interventions that address the root of the problem, namely the level of public knowledge.

The problem of low public knowledge needs serious attention in order to increase awareness of the dangers of coronary heart disease [17], [18]. Data from the American Heart Association shows that every 25 seconds a case of CHD occurs and every minute a death occurs due to this disease [19], [20]. This fact shows how fast and serious the threat of heart disease is to the world community. Health education is one of the strategic steps to reduce this risk by increasing health literacy [21], [22]. If the public understands the risk factors, the opportunity for prevention will be greater.

Globally, coronary heart disease is the leading cause of death in the world. According to the WHO report in 2021, around 17.9 million people die each year from cardiovascular disease, most of which are caused by coronary heart disease and stroke [23], [24]. This figure is equivalent to 32% of all global deaths, indicating the high burden of this disease in various countries [25], [26]. Developing countries are experiencing a faster spike in cases due to lifestyle changes, urbanization, and lack of access to health education [27], [28]. This trend indicates the need for more serious and equitable prevention efforts globally, especially in increasing public awareness.

Common risk factors for coronary heart disease globally include hypertension, high cholesterol, obesity, smoking, diabetes, and chronic stress [29], [30]. WHO and various international health organizations emphasize the importance of controlling these risk factors through promotive and preventive approaches [31], [32]. Unfortunately, in many countries, including low- and middle-income countries, education about preventing Coronary Heart Disease has not been a top priority [33], [34]. In fact, control of these risk factors has been proven to be effective in reducing the incidence of heart disease significantly. In this context, public knowledge is one of the main keys to changing lifestyles and reducing the burden of heart disease as a whole.

Increasing public knowledge through health education has been proven to be an effective global strategy in preventing non-communicable diseases, including coronary heart disease [35], [36]. Targeted education can increase individual awareness of their health conditions and encourage changes in behavior towards a healthier direction [37], [38]. Various international studies have shown that an educational approach can reduce the incidence and death rates from heart disease [26], [39].

Research by Paczkowska et al., [40] emphasizes the importance of patient knowledge in supporting the success of hypertension therapy, but does not explore in depth the preventive aspects of other cardiovascular disease risks, such as coronary heart disease. In contrast, research by Azadi et al., [41] used the Health Belief Model approach to improve preventive behaviors among university staff with hypertension in Iran. Although focused on preventive education, this study focused more on behavior modification and less on the direct link between education and improved understanding of specific cardiovascular diseases. The current study attempts to bridge the two studies by specifically exploring the effect of health education on improving understanding of coronary heart disease as a preventive measure among hypertensive patients. This study offers novelty by integrating a knowledge-based educational approach with a focus on specific cardiovascular diseases, thus providing more specific and targeted insights that were previously lacking in both studies.

The urgency of this research lies in the high prevalence of hypertension which is a major risk factor for coronary heart disease, one of the leading causes of death in the world. Although hypertension treatment efforts have been carried out, the level of knowledge of hypertensive patients about the risk of coronary heart disease is still low, which has an impact on less than optimal prevention measures [40], [42]. Effective health education can be the key to improving patient understanding of the relationship between hypertension and coronary heart disease, while encouraging behavioral changes that support prevention [43], [44]. By providing specific insights into the effect of health education on hypertensive patients' knowledge about coronary heart disease [45], [46], this study has the potential to contribute to improving health education strategies, reducing the incidence of coronary heart disease, and improving patients' quality of life. This urgency is increasingly relevant in the context of the increasing burden of cardiovascular disease globally and the need to strengthen preventive approaches at the primary level. Based on the urgency, this study was conducted to determine the effect of health education on the level of knowledge of people with hypertension regarding risk factors for coronary heart disease.

## 2. RESEARCH METHOD

### 2.1. Research Design

Research design is a method that will be carried out in the research process [47], [48]. The research design used is Pre Experimental Design, namely an experiment that has not met the requirements such as an

experimental method that can be carried out scientifically following certain regulations. While the type of design used in the Pre Experimental Design category is One group pre post test design, namely research that reveals a causal relationship by involving one group of subjects, the group of subjects is observed before the intervention is carried out, then observed again after the intervention.

Table 1. One Group Pre Posttest Design Research Design

| Subject | Pra | Treatment | Post-test |
|---|---|---|---|
| K | P | I | PI |
| | Time 1 | Time 2 | Time 3 |

Information:
K = Subject (Hypertension Sufferer)
P = Assessment of knowledge level before counseling
I = intervention (Counselling)
P1 = Assessment of knowledge level after counseling/intervention

### 2.2. Population and Sample

Population is the entire object of research or the object being studied [49], [50]. If you want to study all the elements in the research area, then the research is a population study. The population in this study is the influence of health education on the level of knowledge of people with hypertension about coronary heart disease, namely with a population of 63 people in one of the health facilities.

The sample is a portion or representative of the population being studied [51], [52]. The sample in this study was people with hypertension in one of the health facilities. The inclusion criteria in this study include people with hypertension aged 40-65 years, willing to be respondents, able to read and write, and not experiencing space and time disturbances. Meanwhile, the exclusion criteria are set to exclude subjects who do not meet the inclusion criteria, such as lack of knowledge and refusal to participate, as well as clients who are not there because they are traveling or busy. Based on these criteria, a sample of 39 respondents was obtained who were patients with hypertension who visited one of the health facilities. The selection of these respondents was carried out by considering their ability to participate in the educational activities provided. Thus, the sample obtained is expected to be able to represent the target population representatively.

The sampling technique or sampling technique in this study is a random technique. Sampling with random sampling technique is the taking of sample members which is done by randomly selecting individual members of the population [53], [54]. The advantage of random sampling technique is that the selected sample members are more representative of the members of the population. The steps taken in this random technique are by using the traditional method, namely lottery.

### 2.3. Instruments and Data Collection

The research instrument is a tool used to collect data in the form of a questionnaire (questionnaire), which is related to recording data and so on. This study used a questionnaire of 20 questions given to the community with hypertension. To see the level of knowledge of the community with hypertension, the researcher gave a pre-test then conducted counseling, after which the researcher gave a post-test.

### 2.4. Data Analysis Techniques

The collected data will be analyzed statistically descriptively and inferentially (significance test). Data is analyzed inferentially in the form of an ordinal test, using the Wilcoxon test. The conclusion is drawn with the criteria if the p value ≤ α (0.05) then H0 is rejected and Ha is accepted, meaning there is an effect of health education on the level of knowledge of the community with hypertension about coronary heart disease at the Mount Sinjar Mobile Medical Clinic. If the p value > α (0.05) then H0 is accepted and Ha is rejected, meaning there is no influence of health education on the level of knowledge of people with hypertension about coronary heart disease.

## 3. RESULTS AND DISCUSSION

### 3.1. Level of Knowledge of Hypertension Sufferers About Risk Factors of Coronary Heart Disease Before Health Education

Frequency Distribution of Level of Knowledge of Hypertension Sufferers About Coronary Heart Disease Before Health Education is Carried Out can be seen in the table 1.

Table 1. Frequency Distribution of Level of Knowledge of Hypertension Sufferers About Coronary Heart Disease Before Health Education

| Knowledge | Frequency (f) | Percentage (%) |
|---|---|---|
| Good | 3 | 7.69 |
| Enough | 14 | 35.90 |
| Less | 22 | 56.41 |
| Number | 39 | 100 |

Based on table 1 from 39 respondents, it can be seen that some of the respondents had insufficient knowledge about the risk factors for coronary heart disease before health education was carried out, namely 22 respondents (56.41%). Several factors that influence a person's level of knowledge are internal factors in the form of age, experience and external factors in the form of education, information, social, cultural, economic, and environmental factors. The older one gets, the more one's comprehension and mindset develop so that the knowledge gained improves. In terms of education, it should be emphasized that someone who is low educated does not necessarily mean that they have low knowledge and vice versa. Increased knowledge is not absolutely obtained in formal education, but can also be obtained in non-formal education. The learning experience in working that is developed will provide professional knowledge and skills.

Before being given health education, the respondents' knowledge was in the poor category. In terms of education, almost half of the respondents had secondary education. Although many have secondary education, it does not guarantee that someone will understand something like health problems about coronary heart disease. This is because when going to school, special health problems such as coronary heart disease are not taught enough, so that when leaving school, the respondents' understanding is still lacking. The respondents' jobs as farmers are very different from coronary heart disease, which is what causes knowledge to be lacking. Another factor that is no less important is information. So far, information about coronary heart disease is still very limited, rarely covered in the mass media, making respondents less aware of the problems they face.

### 3.2. Level of Knowledge of Hypertension Sufferers About Risk Factors of Coronary Heart Disease After Health Education

Frequency Distribution of Knowledge Level of Hypertension Sufferers About Coronary Heart Disease After Health Education.

Table 2. Frequency Distribution of Level of Knowledge of Hypertension Sufferers About Coronary Heart Disease After Health Education

| Knowledge | Frequency (f) | Percentage (%) |
|---|---|---|
| Good | 21 | 53.85 |
| Enough | 15 | 38.46 |
| Less | 3 | 7.69 |
| Number | 39 | 100 |

Based on table 2 from 39 respondents, it can be seen that some of the respondents have good knowledge about the risk factors for coronary heart disease after health education, namely 21 respondents (52.85%). Information obtained from both formal and non-formal education can have a short-term influence so that it results in changes or increases in knowledge. As a means of communication, various forms of mass media such as television, radio, newspapers, magazines and others have a major influence in forming people's opinions and beliefs. Health education is a learning process that means that in education there is a process of growth, development, or change towards a more mature, better, and more mature individual, group or community. In a short time, health education will result in changes or increases in community knowledge.

Respondents' knowledge after health education about the factors of coronary heart disease changed for the better. Health education is carried out using the lecture method and using leaflets so that the delivery of material can be done well so that respondents will find it easier to understand the material that has been taught. The existence of good information and information delivery will provide a new cognitive foundation so that knowledge is formed, namely about the factors of coronary heart disease.

### 3.3. The Influence of Health Education on the Level of Knowledge of Hypertension Sufferers Regarding Risk Factors for Coronary Heart Disease

Results of the analysis of the influence of health education on the level of knowledge of people with hypertension about the risk factors for coronary heart disease.

Table 3. Cross Tabulation of the Influence of Health Education on the Level of Knowledge of Hypertension Sufferers Regarding Risk Factors for Coronary Heart Disease

| Pre-Test | Post-test | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Less | | Enough | | Good | | | |
| | f | % | f | % | f | % | f | % |
| Less | 3 | 7.7 | 15 | 38.5 | 4 | 10.3 | 22 | 56.4 |
| Enough | 0 | 0 | 0 | 0 | 14 | 35.9 | 14 | 35.9 |
| Good | 0 | 0 | 0 | 0 | 3 | 7.7 | 3 | 7.7 |
| Total | 3 | 7.7 | 15 | 38.5 | 21 | 53.8 | 39 | 100 |
| The Wilcoxon signed rank test statistical test obtained a p value = 0.000 < α = 0.05 so that Ha was accepted | | | | | | | | |

Based on table 3, data obtained almost half of the respondents had insufficient knowledge before being given health education and sufficient knowledge of health education after being given, namely 15 respondents (38.5%). The Wilcoxon signed rank test statistical test obtained a p value = 0.000 < α = 0.05 so that Ha is accepted and Ho is rejected so that there is an effect of health education on the level of knowledge of the community with hypertension about the risk factors for coronary heart disease.

The formation of new behavior, especially in adults, begins in the cognitive domain, meaning that the subject knows in advance about the stimulus in the form of material or objects outside. Health education is an application of the concept of education in the health sector. Education is a learning process which means that in education there is a process of growth, development, or change towards a more mature, better, and more mature direction in individuals, groups or communities [55], [56]. A person can be said to be learning if there is a change in him, from not knowing to knowing. In a short time, health education will result in changes or improvements in community knowledge.

Education has been proven to increase knowledge. This is because in health education there is a learning process [57], [58]. The learning process in the short term will increase a person's knowledge if it is interpreted in depth. Health education about the factors of coronary heart disease delivered through leaflets will facilitate the learning process because leaflets can be taken home and read repeatedly [59], [60], the repeated learning process will make someone have sufficient knowledge to take action correctly.

This study has the potential to provide significant impact in improving the effectiveness of health education programs for hypertensive patients, especially in expanding their knowledge about the risk of coronary heart disease and encouraging better preventive behavior. The results of this study can be the basis for developing targeted education-based interventions and supporting health policies in integrating preventive approaches in primary health care, so as to reduce the number of coronary heart disease complications and reduce the burden of long-term health costs. However, this study has several limitations, including the potential difficulty in generalizing the results if the sample is not sufficiently representative of the wider population. Factors such as variations in social, cultural, and economic contexts, as well as access to health services can also affect the effectiveness of education. In addition, this study did not evaluate the long-term impact of education on behavioral change or clinical outcomes, so further research is needed to address these limitations.

## 4. CONCLUSION

Of the 39 respondents, some of the respondents had insufficient knowledge about the risk factors for coronary heart disease before health education was conducted, namely 22 respondents (56.41%). Of the 39 respondents, some of the respondents had good knowledge about the risk factors for coronary heart disease after health education was conducted, namely 21 respondents (52.85%). There is an influence of health education on the level of knowledge of the community with hypertension about the risk factors for coronary heart disease at Mount Sinjar Mobile Medical Clinic. This is based on the Wilcoxon signed rank test with a p value = 0.000 <= 0.05, which means that Ha is accepted and Ho is rejected. Further research is recommended to expand the population coverage by involving more diverse groups in terms of age, social, cultural, and economic background to increase the generalizability of the results.

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