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# Knowledge and learning preferences of patients with myocardial infarction

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## ABSTRACT

**Introduction.** The objective of the research was to study the knowledge about ischaemic heart disease and learning preferences of hospitalised patients as a result of myocardial infarction.

**Methods.** The tested group comprised of 248 patients, aged  $63 \pm 11.25$ , who were hospitalised as a result of myocardial infarction. A questionnaire with 20 single-choice questions was used in the research. The questionnaire tested the knowledge of the patients as far as ischaemic heart disease, myocardial infarction symptoms, and preventive healthcare are concerned. The patients were divided into groups depending on what knowledge sources on ischaemic heart disease they preferred — brochures, magazines, radio and TV, individual talks, group talks, films, the Internet.

**Results.** The proportion of correct answers was  $58.49 \pm 19.89\%$ ; in the area of the disease knowledge  $62.74 \pm 31.52\%$ ; in the area of the preventive healthcare  $57.14 \pm 23.38\%$ ; and in the area of the disease symptoms  $56.94 \pm 25.84\%$ . The source of health knowledge selected the most was educational brochures (80.2%), while radio and TV was selected the least (17.6%). The knowledge varied depending on patients' preferences: so those who selected films — the knowledge of the disease symptoms was higher compared to the others ( $64.44 \pm 26.93\%$  vs.  $55.27 \pm 25.35\%$ ;  $p = 0.02$ ); those who selected individual talks — the knowledge of the disease symptoms was lower compared to the others ( $55.33 \pm 24.80$  vs.  $61.68 \pm 26.51$ ;  $p = 0.007$ ); those who selected group talks — the knowledge of the disease symptoms was higher compared to the others ( $62.30 \pm 28.07$  vs.  $55.16 \pm 24.96$ ;  $p = 0.02$ ). As far as the other two areas of knowledge are concerned, there were no significant differences in any group.

**Conclusions.** Educational brochures are the most preferred source of knowledge about ischaemic heart disease by hospitalised patients as a result of myocardial infarction. The knowledge of ischaemic heart disease in patients with myocardial infarction is inadequate and it is not connected with patients' preferences from the point of view of learning methods.

**Key words:** health education, educational brochures, ischaemic heart disease

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## Introduction

The knowledge of disease symptoms and the possibilities to prevent the disease are a prerequisite for the effectiveness of actions in relation to primary and secondary prevention [1, 2].

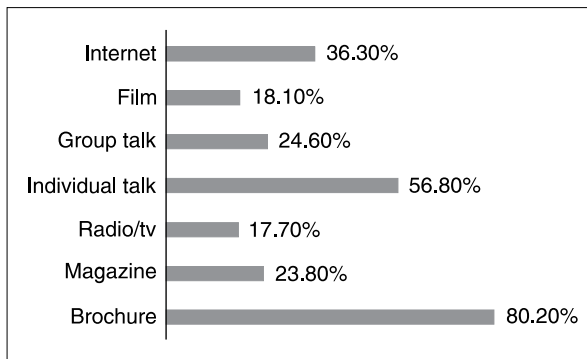
Methods focused on providing information, motivating and changing health behaviour are employed in health education [3].

Brochures are the most popular sources of spreading health education. In principle, they are used as a scientifically documented instrument to provide information about health and the disease. On the other

hand, leaflets and posters are a form of motivation to change health behaviour [4, 5]. Apart from the motivational aspect, educational meetings, which involve counselling and coaching, help patients to cope with a new situation in life [6, 7].

Apart from medical staff, personal sources of knowledge about health and the disease involve people who are far less credible and often spread common, frequently false and harmful information [8].

The objective of the research was to study the knowledge about ischaemic heart disease and learning preferences of hospitalised patients as a result of myocardial infarction.



**Figure 1.** Preferred sources of health knowledge selected by the patients — a proportion of selected options

## Material and methods

The research was conducted on the basis of consent no. KB 312/2015 of 21 April 2015 of the Bioethics Committee of the Nicolaus Copernicus University functioning at Collegium Medicum in Bydgoszcz.

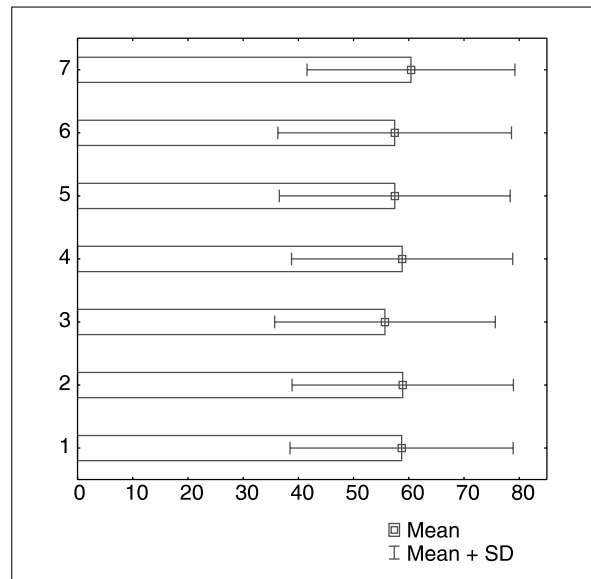
Among a group of 248 patients hospitalised as a result of ischaemic heart disease, the evaluation of knowledge in three areas was made: ischaemic heart disease, myocardial infarction symptoms, and preventive healthcare. The evaluation of the knowledge was made at the beginning of hospitalisation (during the first or second day at hospital), before educational actions were implemented. A questionnaire with 20 single-choice questions was used in the research. 1 point was given for each correct answer. Besides, the tested patients selected their preferred health knowledge sources. To that end, the questionnaire also included a multiple-choice question featuring the following options: brochure, magazines, radio/TV, individual talks, group talks, films, the Internet. Irrespective of objective knowledge validation, the patients were asked to evaluate their knowledge by defining it, subjectively, as sufficient or insufficient.

The research involving 176 men (71%) and 72 women (29%) aged  $63 \pm 11.25$  is a subanalysis of the research project that was published before [PM]. The group characteristics was presented in the earlier article.

The results of the statistical analysis was presented as a mean percentage of correct answers with the standard deviation. For comparisons between the variables, the Mann-Whitney U test was used. Values of  $p < 0.05$  were regarded as statistically significant.

## Results

In the evaluation of the group knowledge, the proportion of correct answers was  $58.49 \pm 19.89\%$ . The tested patients had the greatest knowledge of the



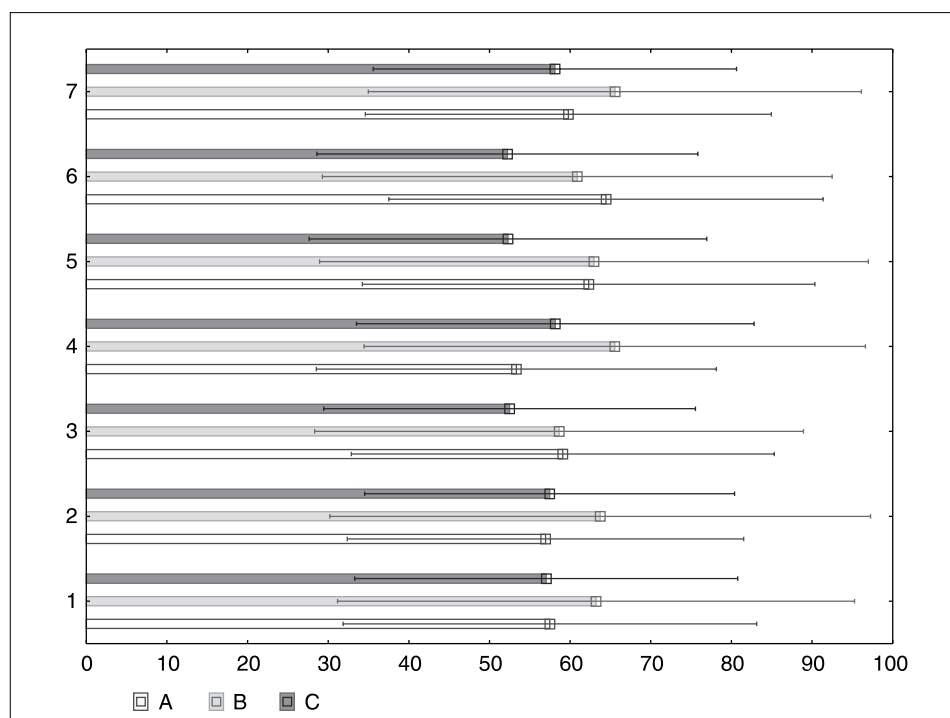
**Figure 2.** Aggregate results of patients' knowledge evaluation (proportion of correct answers) according to the preferred source of knowledge; 1 — brochure; 2 — magazine; 3 — radio/TV; 4 — individual talk; 5 — group talk; 6 — film; 7 — Internet; SD — standard deviation

disease ( $62.74 \pm 31.52\%$ ), their knowledge of the disease symptoms was the lowest ( $56.94 \pm 25.84\%$ ), and the proportion of correct answers as far as preventive healthcare is concerned was  $57.14 \pm 23.38\%$ . When it comes to patients' knowledge self-evaluation, 15.3% of the tested patients defined it as sufficient while 84.7% of the tested patients as insufficient. On the other hand, the comparison between the results of the objective evaluation did not show any significant differences between these groups. The proportion of correct answers was  $61.32 \pm 23.07\%$  and  $57.98 \pm 19.28\%$  respectively. The source of health knowledge selected the most was educational brochures (80.2%), while radio or TV was selected the least (17.6%) (Fig. 1).

The results of the evaluation of the patients' knowledge in the tested areas are shown in Figure 2. The small differences were not statistically significant.

The objective evaluation of the patients' knowledge, which involved the three aggregate areas, showed that the highest results were achieved by the patients who selected the Internet as their source of knowledge, whereas the lowest results were achieved by patients who selected radio or TV as their source of knowledge. However, the differences were not significant.

Additional interesting information was revealed as a results of the division into the areas of knowledge. In a group of patients who selected films as their preferred source of knowledge, the highest results of the knowledge evaluation was noticed in the area "disease symp-



**Figure 3.** Results of the patients' knowledge evaluation (proportion of correct answers) divided into the areas depending on the preferred source of knowledge. Areas of knowledge: A — the disease symptoms; B — the disease; C — preventive healthcare; 1 — brochure; 2 — magazine; 3 — radio/TV; 4 — individual talk; 5 — group talk; 6 — film; 7 — Internet;

toms”, both in comparison to the other tested groups ( $p = 0.06$ ) and the other areas in this group ( $p = 0.06$ ). The illness knowledge was a dominant area in groups who selected the Internet ( $p = 0.09$  for the diversity of respective knowledge areas), group talks ( $p = 0.03$  for the diversity of respective knowledge areas), individual talks ( $p = 0.0006$  for the diversity of respective knowledge areas), and magazines and brochures ( $p = 0.03$  for the diversity of respective knowledge areas) as their preferred sources of knowledge. The preventive healthcare knowledge was dominant in comparison to other knowledge areas in groups who selected films and radio/TV as their preferred source of knowledge ( $p = 0.06$ ).

The comparison of the results of patients' objective knowledge evaluation in the highlighted areas depending on the patients' preferred sources of knowledge showed significant differences in: patients who selected films — the knowledge of the disease symptoms was higher compared to the others ( $64.44 \pm 26.93\%$  vs.  $55.27 \pm 25.35\%$ ;  $p = 0.02$ ); patients who selected individual talks — the knowledge of the disease symptoms was lower compared to the others ( $55.33 \pm 24.80$  vs.  $61.68 \pm 26.51$ ;  $p = 0.007$ ); patients who selected group talks — the knowledge of the disease symptoms was higher compared to the others ( $62.30 \pm 28.07$  vs.  $55.16 \pm 24.96$ ;  $p = 0.02$ ). As far the other two areas of knowledge are concerned, there were no significant differences in any group.

## Discussion

Instruments that health education has at its disposal provide many ways to take actions with a view to improving the scope of patients' knowledge.

Available scientific studies contain many reports of the evaluation of cardiology patients' knowledge about cardiovascular diseases. Most of the results in such studies are not satisfactory [9–14]. Our research serves as a confirmation. Regardless of preferred sources of knowledge acquisition, the number of correct answers regarding patients' general knowledge was slightly above 50%. We have shown that patients lack knowledge in terms of preventive healthcare.

Dziedzic et al. [12] showed that patients had an inaccurate perception as to the risk factors of heart diseases. They show that despite a high level of knowledge of modifiable risk factors, the patients falsely regarded genetic load as more important than lifestyle. Buraczyński and Golib [13] also note patients' lack of knowledge after coronary angioplasty. Regarding such factors as hypertension, hypercholesterolemia, nicotine dependence and diabetes as unmodifiable reflects upon insufficient knowledge in such a patients' group.

By evaluating their knowledge, a vast majority of tested patients noticed that they had insufficient knowledge, which was reflected in the objective evaluation. Such a critical evaluation of the situation is a good

starting point for the implementation of educational actions. On the other hand, approximately 15% of the tested patients claimed that their knowledge was sufficient, but the objective evaluation did not support that. In such a patients' group, it seems advisable to take motivational actions before making an educational intervention.

Patients could select any number of preferred sources of knowledge about ischaemic heart disease in the research. Without doubt, educational brochures and individual talks were selected the most (by over 50% of the tested patients).

In the studies assessing the knowledge of patients on hypertension conducted by Taran et al. [15], 31% of women and 17% of men indicated educational brochures as the form of education preferred by them. However, for the majority of patients, the contact with the medical staff — individual conversation was the best source of knowledge.

It should be assumed that the preferences of patients don't have to be identical to the effectiveness of indicated sources of knowledge. The effectiveness of these sources could only be verified after an objective evaluation of possessed knowledge resources after the use of educational instruments that are standardised in terms of content and different in terms of form. However, in our study, the indication of preferences of patients should not be understood as their declaration of using these sources. Nevertheless, the data obtained on both knowledge resources and preferences concerning educational methods constitute important information during the planning of educational strategies. We presented the effectiveness of the educational intervention by means of brochures before [8] by noting a significant increase in correct answers ( $p < 0.05$ ) and decrease in answers such as "I do not know" ( $p = 0.003$ ) in the group of patients hospitalised due to acute myocardial infarction in whom we used this educational instrument. The convergence of patient's preferences and the confirmed effectiveness of the authors' own educational instrument (coronary heart disease — educational brochure for patients) give us hope that the effectiveness measured with growing knowledge will translate into the effectiveness measured with clinical endpoints.

Nowadays, the press, radio and television, as well as modern technologies using the Internet play an important role in human life. The dissemination of knowledge on health is one of the tasks of the media, in particular public media and constitutes an element of the accomplishment of its mission. Due to the fact that the media is commonly available, it is able to effectively build knowledge and modify attitudes and health behaviours of the society, which has been proven in many countries. However, success is conditioned by well-planned and consistently carried out long-term activities

in this area [7, 16]. In our research, the percentage of patients who indicated radio or television as preferred knowledge sources was surprisingly low, at only approx. 18%, while twice as many participants indicated the Internet. This observation seems to reflect general changes concerning preferences in the scope of gaining information. Observations by other researchers also confirm this. When evaluating knowledge concerning risk factors of cardiovascular diseases, Owoc et al. [17] found that the Internet and television were the most frequently used means of gaining knowledge on this topic. They showed that, despite satisfactory knowledge concerning risk factors, the students had trouble defining their negative influence on the human body.

Within the population studied by us, knowledge evaluated collectively in three areas did not exhibit significant differences depending on indicated preferred knowledge sources. However, analysis of individual areas revealed certain differences, difficult to interpret, which concerned only knowledge about symptoms of the disease.

Results of other study conducted on a population of 300 people aged 15–35 led Szymczyk et al. [18] to conclude that the participants obtain health-related information from media, from doctors and from nurses. Information obtained through media generally concerns staying in good health. It is related to taking advantage of preventive programs prepared by health care employees and health-promoting programs broadcast on television.

Film provides interesting educational opportunities. Educational content can be included in films and series broadcast on television, such as histories of people affected by various problems and ways of dealing with difficult situations. Strong visualization enables the recipients to consciously or unconsciously introduce health-promoting activities into their lives [19].

It is hard to say to what extent the indicated preferences regarding the choice of educational method are thought-out choices which take the characteristics of each educational method into account. Participants indicated brochure, which requires a definitely active attitude on the part of the patient, surprisingly often, while the most comfortable form which assumes passiveness of the recipient, that is radio and television, was chosen the least frequently. The disadvantage of both of these methods is their lack of interactivity, which talks, especially individual talks, do provide [20].

In conclusion, it should be said that patients' preferences regarding knowledge sources correspond with their knowledge concerning the disease which caused their hospitalisation only in a limited fashion. However, information obtained in this manner, on one hand, constitutes a reference point for evaluating the effectiveness of undertaken educational activities, and on the other

hand, allows to take patients' preferences regarding the choice of optimal tools and methods into account. Regardless of the form of educational influence, a direct contact with the patient and his/her family, besides a chance to pass knowledge, provides considerable opportunities related to building motivation which is the primary condition of effective secondary prevention. That is why a well-thought-out combination of various forms of influencing the patient and his/her immediate environment may be much more beneficial than using only one method [1, 2, 4, 8, 9].

## Conclusions

1. Educational brochures are the preferred source of knowledge about ischaemic heart disease for patients hospitalised as a result of myocardial infarction.
2. The knowledge of ischaemic heart disease possessed by patients with myocardial infarction is inadequate and there is no clear connection with patients' preferences regarding the choice of educational methods.

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