Supplementary material

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SUMMARY OF PROGRAM

Health problem

The problem of patients after acute coronary syndromes (ACS) is epidemiologically significant, and improving their care can reduce deaths in this group and achieve better therapeutic results. Cardiovascular diseases have been the main cause of illness and death in Poland for many years. Despite the improvement in the epidemiological situation, in the last two decades the mortality rates due to these diseases and premature mortality rates (under 65 years of age) are still high in Poland[1]. Based on data presented in the "Map of health needs of the Świętokrzyskie Voivodeship"[2] in the years 2011-2013, approximately 42 thousand were recorded in the Świętokrzyskie Voivodeship. deaths. The most common causes of death were circulatory system diseases - 49.8% of all deaths. Using the data contained in the document "Maps of health needs in the field of cardiology" for the Świętokrzyskie Voivodeship, it can be concluded that the most frequently diagnosed patients were ischemic heart disease, heart failure, atrial fibrillation and flutter, and other rhythm and conduction disorders. According to the "Map of health needs in the field of cardiology for the Świętokrzyskie Voivodeship", it should be stated that in the Świętokrzyskie Voivodeship ACS occurs in approximately 5,200 people per year, which allows us to define this population at 15,600 people during the implementation of the Program. This group includes people who underwent percutaneous coronary interventions (PCI) approximately 4,100 times a year; approximately 12,300 during the Program implementation. It was estimated that the Program would cover at least approximately 2,500 people per year (approx. 7,500 during the Program implementation), which constitutes approximately 38% of the target group.

Program objectives

The implementation of the Program in the Świętokrzyskie Voivodeship was aimed at improving the effectiveness of treatment of patients with ACS. Improving the continuity and comprehensiveness of care for patients after a heart attack allows for the continuation of the enormous success achieved in the area of invasive cardiology, and intensifying activities in the area of secondary prevention complements the success of treatment of patients after ACS. Providing comprehensive care for a patient after ACS allows: – reduce financial resources spent on hospital treatment of complications, – reduce the number of patients with repeated ACS, –

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[1] http://www.who.int/en/, [18.06.2024 r.].
[2] https://basiw.mz.gov.pl/mapa/mapy/woj-swietokrzyskie/, [18.06.2024r.].

number of deaths in a longer time horizon, – less sickness absence due to repeated ACS. The aim of the Program was to reduce the number of repeated ACS by 20% and deaths by 10% in patients who underwent comprehensive interventions implemented under the Program over the 3 years of its duration. Under the Program, the healthcare provider ensured the following scope of services:

- conducting an interview and completing the first part of the Preventive Examination Card;
- performing biochemical blood tests (blood concentration of total cholesterol, LDL-cholesterol, HDL-cholesterol, triglycerides and glucose levels), measuring blood pressure, determining BMI;
- entering test results into the Preventive Test Card.

Justification of the need to implement the Program

There are no services relating to long-term education and full, comprehensive monitoring of patients with ACS. Currently, as part of the care of patients after ACS, educational activities are carried out and the patient is entitled to cardiac rehabilitation pursuant to the regulation of the Minister of Health of December 16, 2016 amending the regulation on guaranteed services in the field of therapeutic rehabilitation. These are benefits financed by the public payer (NFZ).

The problem of patients after ACS is epidemiologically important, and improving their care will reduce deaths in this group and achieve better therapeutic results. Secondary prevention of ACS is a complex issue, the individual elements of which require the involvement of many entities. Cardiovascular diseases have been the main cause of illness and death in Poland for many years. Despite the improvement in the epidemiological situation, premature mortality rates (under 65 years of age) in Poland are still high in the last two decades.[3].

Program recipients

The program was aimed at people of economically active age, aged 18 to 65. This group includes people who underwent percutaneous coronary interventions (PCI).

According to the "Map of health needs in the field of cardiology for the Świętokrzyskie Voivodeship", the number of cardiology nurses was 32 specialists (as of 2015). A total of 200 nurses (cardiology nurses and nurses working in cardiology wards or clinics - without specialization) were covered by educational activities (trainings, courses), which constitutes 12% of the staff.

Invitation mode to the Program

An integral element of the Program was an information campaign conducted by the beneficiaries implementing the Program, addressed in particular to doctors, cardiology nurses, outpatient specialist care clinics (including in the field of cardiology) and hospital departments - internal medicine, cardiology, cardiac surgery, hemodynamics laboratory, etc. - people who informed the patient about the benefits of participating in the Program.

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[3] http://www.who.int/en/, [18.06.2024r.].

As part of the Program, there was close cooperation between the beneficiary implementing the Program and, among others, primary health care in order to reach as many interested people as possible, including the patient's environment.

In order to intensify information activities, leaflets, posters and brochures about the Program were printed. Educational activities for health were undertaken, addressed to all residents of the Świętokrzyskie Voivodeship, including the broadcasting of radio and television spots/broadcasts as well as information contained on the Program's website. Information about activities undertaken under the Program was also posted on websites dedicated to health and social networking sites of the Świętokrzyskie Voivodeship, and a website was created with information about the program for people interested in the program and their families in order to support people participating in the program.

Criteria and method of qualifying participants

Nurses working every day in cardiology wards or clinics and specializing in cardiology were included in the program.

Inclusion criteria for Program participants:

- age up to 65;
- person after ACS;
- a person living or working in the Świętokrzyskie Voivodeship.

Exclusion criteria – failure to meet the above criteria.

The final qualification for the Program was decided by the nurses recruiting the program participants.

Components, stages and organizational activities

Program implementation stages:

- conducting an information campaign about the Program;
- conducting training among medical staff;
- recruitment and qualification of patients for the Program;
- monitoring the patient through follow-up visits and telephone calls with a health educator;
- ongoing monitoring of quality and reporting;
- evaluation after the completion of the Program.

Interventions

Training for the program's medical staff was conducted by specialized people (Master of Science in dietetics, clinical psychologist, emergency medical specialist, public health specialist, cardiologist/cardiac surgeon with at least 10 years of experience in the care of cardiac patients with experience in conducting training). All the interventions below were comprehensive activities that complement the guaranteed benefits.

Table S1. Areas of intervention

Intervention	Scope
Training for nurses (cardiology nurses and nurses working in cardiology wards or clinics - without specialization)	Training topics: – principles of healthy eating (nutrition in circulatory system diseases, in accordance with the recommendations of the Institute of Food and Nutrition and international guidelines in this area) - classes conducted by a dietitian; – acquiring the ability to determine BMI and measuring waist circumference in order to assess abdominal obesity - classes conducted by a dietitian; – the need to stop smoking (the impact of smoking on health, available methods of combating addiction) – classes conducted by a public health specialist; – the need to limit or stop drinking alcohol (the impact of alcohol on health, available methods of combating addiction) - classes conducted by a public health specialist; – ability to analyze basic biochemical parameters, including: cholesterol (HDL/LDL), glucose, necessary in determining patient monitoring, ability to read and initially analyze the ECG recording - classes conducted by a specialist cardiologist with min. 10 years of experience; – systematic physical activity (presentation of, among others, individualized types of physical exercises for a specific type of patient, e.g. obese/overweight or elderly) - classes conducted by a public health specialist; – discussion of types of exercises according to their type: endurance, resistance, general fitness, presentation of the recommended time and frequency of exercise for people with cardiovascular diseases, benefits and risks resulting from physical activity - classes conducted by a public health specialist; – discussion of issues related to the development of psychosocial skills (controlling anxiety, learning to cope with stress, moments of low "good mood" in the patient, providing knowledge on how to deal with a patient who cannot cope with the limitations resulting from the disease) - workshops conducted based on o cognitive-behavioral approach by a clinical psychologist;
Educational activities for the patient within 12 months after the completion of the educational and rehabilitation cycle	Topics of educational meetings: – proposing physical activity sessions (trying to match physical activity to the patient's abilities); – changing eating habits (trying to develop a new diet regimen with the patient, adapting the diet to a given patient); – presenting information on the effects of smoking and alcohol abuse (benefits of stopping the use of stimulants); – contact with the patient's family (directing the patient's family to help a person with cardiac diseases, providing helpful tips regarding a family member's illness); – presenting information on the implementation of strict pharmacotherapy as part of cardiological treatment proposed by the attending physician (scrupulousness and continuity of taking medications, compliance with medical recommendations, consequences of not taking medications and ignoring medical recommendations); – learning to fight stress/depression caused by illness; an attempt to teach the patient how to cope with stressful situations, an attempt to avoid them in everyday life (classes conducted for the patient and possibly family members);

Source: own study

Rules for providing benefits under the program

A health educator was appointed for each patient who provided care and control over the patient's actions. Assigning a health educator to each patient individually improved the effectiveness of the therapeutic process. Program participants were covered by activities under the Program for a period of approximately 12 months. The health educator's contact was tailored to the patient's needs in order to obtain the best possible results under the Program. After its completion, patients received guidelines from educators on further health-promoting behavior and information on the possibility of continuing rehabilitation under guaranteed services.

The interventions planned in the project are consistent with the recommendations of the Polish Society of Cardiology, according to which an effective cardiac rehabilitation and secondary prevention program should include, among others: from education about lifestyle, risk factors, cardiovascular diseases and the need to follow medical recommendations. In addition, the planned activities are confirmed in the guidelines of the British Association for Cardiovascular Prevention and Rehabilitation, the Royal Dutch Society for Physical Therapy, the American Association of Cardiovascular and Pulmonary Rehabilitation/American Heart Association[4].

Program evaluation

Table S2. Measurement of program effectiveness

l.p.	efficiency measures	level achieved at the end of each calendar year						
		2018	2019	2020	2021	2022	all	
							total	%
	1	2	3	4	5	6	7=2+3+4+5+6	8
1	the number of people qualified for participation who experienced ACS again during the Program implementation	0	0	21	26	0	47	0,64
2	number of people eligible for participation who died due to recurrence of ACS	0	0	21	26	0	47	0,64
3	number of people qualified to participate who used pharmacotherapy in accordance with medical recommendations during the implementation of the Program	0	0	6719	607	0	7326	100
4	the number of people qualified to participate in the Program who stopped smoking	0	0	0	0	4470	4470	61
5	the number of people qualified to participate who modified their eating habits as a result of educational activities	0	0	0	0	6100	6100	83,2
6	the number of people qualified to participate who started regular physical activity as a result of educational activities carried out during the implementation of the Program	0	0	0	0	4570	4570	62,3

Source: own study

[4] http://wwwold.aotm.gov.pl/assets/files/Opinie-sam_pr_zdr/2016/OP-155-2016.pdf, [18.06.2024 r.].

Fundusze Europejskie
Program Regionalny

WOJEWÓDZTWO ŚWIĘTOKRZYSKIE

Unia Europejska
Europejski Fundusz Społeczny

Ankieta pacjenta

Szanowni Państwo,

Poniższa ankieta ma na celu poznanie Państwa opinii, sugestii oraz uwag na temat funkcjonowania Regionalnego Programu Zdrowotnego w zakresie kompleksowej rehabilitacji kardiologicznej w ramach profilaktyki wtórnej u mieszkańców woj. świętokrzyskiego w wieku aktywności zawodowej po ostrych zespołach wieńcowych, w którym Państwo uczestniczyli. Otrzymane informacje pozwolą na jeszcze lepszą organizację tego rodzaju przedsięwzięć w przyszłości. Proszę o udzielanie odpowiedzi, zaznaczając odpowiednie pole znakiem X. Ankieta jest w pełni anonimowa.

1. Proszę określić płeć oraz wiek:

☐ kobieta ☐ mężczyzna wiek ____________________

2. Czy Pani/Pana zdaniem Program odpowiadał Pani/Pana oczekiwaniom?

☐ zdecydowanie tak
☐ raczej tak
☐ trudno powiedzieć
☐ raczej nie
☐ z decydowanie nie

3. Czy jest Pani/Pan zadowolona/-y z organizacji udzielania świadczeń w ramach Programu?

☐ zdecydowanie tak
☐ raczej tak
☐ trudno powiedzieć
☐ raczej nie
☐ zdecydowanie nie

4. Czy jeśli znałaby Pani/ znałby Pan Osobę po OZW poleciłaby Pani/ poleciłby Pan Ten Program innym osobom?

☐ zdecydowanie tak
☐ raczej tak
☐ trudno powiedzieć
☐ raczej nie
☐ zdecydowanie nie

5. Czy jest Pani/Pan zadowolona/-y z jakości poszczególnych zadań udzielonych w Programie?

☐ zdecydowanie tak
☐ raczej tak
☐ trudno powiedzieć
☐ raczej nie
☐ zdecydowanie nie

6. Jeżeli w poprzednim pytaniu padła odpowiedź „raczej nie" lub „zdecydowanie nie" proszę wskazać z jakich elementów Programu nie jest Pani zadowolona/Pan zadowolony?

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7. Czy po przeprowadzonych zajęciach edukacyjno-szkoleniowych Pani/Pana wiedza na temat czynników ryzyka chorób układu krążenia i czynników chroniących przed ponownym wystąpieniem OZW (w porównaniu do poziomu wiedzy przed przystąpieniem do Programu) jest:

- ☐ zdecydowanie tak
- ☐ raczej tak
- ☐ trudno powiedzieć
- ☐ raczej nie
- ☐ zdecydowanie nie

8. Czy uważa Pani/Pan, że regularnie uprawiana aktywność fizyczna odpowiednio dobrana do stanu zdrowia jest ważna, aby zapobiec rozwojowi chorób układu krążenia?

- ☐ zdecydowanie tak
- ☐ raczej tak
- ☐ trudno powiedzieć
- ☐ raczej nie
- ☐ zdecydowanie nie

9. Czy po przeprowadzonych zajęciach edukacyjno-szkoleniowych Pani/Pana motywacja do prowadzenia zdrowego stylu życia uwzględniającego m.in. zdrowe odżywianie i aktywność fizyczną jest (w porównaniu do motywacji przed zajęciami):

- ☐ zdecydowanie tak
- ☐ raczej tak
- ☐ trudno powiedzieć
- ☐ raczej nie
- ☐ zdecydowanie nie

10. Czy kontakt telefoniczny oraz regularne spotkania z edukatorem w Pani/Pana ocenie powodowały większa motywacje do zmiany trybu życia (np. większa aktywność fizyczna, zmiana diety)?

- ☐ zdecydowanie tak
- ☐ raczej tak
- ☐ trudno powiedzieć
- ☐ raczej nie
- ☐ zdecydowanie nie

Table S3. The distribution of patients according to BMI, age, and county-level residence

Variable	Group	n (%)
Age, years	<30	178 (2.34)
	30-39	788 (10.35)
	40-49	2082 (27.35)
	50-59	3100 (40.73)
	≥60	1464 (19.23)
BMI	<18.5	66 (0.87)
	18.5 – 24.99	2143 (28.23)
	25 – 29.99	3466 (45.67)
	≥30	1915 (25.23%)
County	Buski	569 (7.48)
	Jędrzejowski	146 (1.92)
	Kazimierski	4 (0.05)
	Kielce	1308 (17.18)
	Kielecki	1349 (17.72)
	Konecki	591 (7.76)
	Opatowski	117 (1.54)
	Ostrowiecki	363 (4.77)
	Pińczowski	542 (7.12)
	Sandomierski	720 (9.46)
	Skarżyski	712 (9.35)
	Starachowicki	744 (9.77)
	Staszowski	122 (1.60)
	Włoszczowski	325 (4.27)