Is the KOS-Zawał coordinated care program effective in reducing long-term cardiovascular risk in coronary artery disease patients in Poland? Insights from analysis of statin persistence in a nationwide cohort

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ABSTRACT

Background: The KOS-Zawał coordinated care (CC) program was introduced in response to challenges in achieving satisfactory survival rates for acute myocardial infarction (AMI) patients in Poland. This system addresses fragmented health delivery for high-risk patients. One of its principal targets is to ensure effective management of dyslipidemia, a critical aspect of secondary prevention, which is often affected by poor adherence.

Aims: We aimed to analyze statin therapy discontinuation among high-risk coronary artery disease (CAD) patients in Poland and assess whether the CC program reduces the chances of non-adherence.

Methods: A retrospective analysis of the nationwide dispensation database covered the period from January 1 to December 31, 2022. Discontinuation was defined as failure to collect a medication within 60 days after the previous supply had run out.

Results: The analysis identified 214 649 high-risk CAD patients. CC turned out to be effective in reducing statin discontinuation risk among post-AMI patients (relative risk [RR] = 0.49; *P* <0.0001; 95% CI, 0.47–0.51) and in patients after percutaneous coronary intervention (post-PCI)/coronary artery bypass graft (CABG) (RR = 0.68; *P* <0.0001; 95% CI, 0.66–0.71) as well as all CAD patients (RR = 0.57; *P* <0.0001; 95% CI, 0.55–0.59). However, statin discontinuation occurred in 1/5, 1/7, and 1/9 of post-AMI, post-PCI/CABG, and all CC patients.

Conclusions: While affirming the efficacy of coordinated care, the results highlight an 11.0% discontinuation rate in this setting, showing a disparity between the recommended therapy and its execution. Therefore, urgent system-wide interventions are needed, including optimising the KOS-Zawał program. Strategic adoption of digital solutions and a dedicated system of alerts for prescribers are potential solutions to address the existing challenges.

Key words: cardiovascular risk, coordinated care, discontinuation, persistence, Poland, statins

INTRODUCTION

Despite multiple interventions employed in this field, cardiovascular disease (CVD) still accounts for a large portion of morbidity and mortality in Poland. Currently, over 40% of total deaths in our country are attributed to CVD, with atherosclerotic cardiovascular disease (ASCVD) being the leading cause of mortality [1]. According to epidemiological studies, dyslipidemia is the most common risk factor for ASCVD in the Polish population. The most recent nationwide cross-sectional study LIPIDOGRAM2015, conducted among adult patients seeking medical care in primary

W H A T ' S N E W ?

This first-of-its-kind nationwide analysis of the effectiveness of the Polish KOS-Zawał coordinated care program in reducing long-term cardiovascular risk among coronary artery disease patients has yielded promising results. Our study showed a significant reduction in the risk of statin discontinuation in patients after AMI (acute myocardial infarction) and percutaneous coronary intervention/coronary artery bypass graft as well as all coronary artery disease patients in the program. However, the finding that 1 in 9 patients discontinues statin therapy in the coordinated care group highlights a gap between recommendations and their execution. Urgent system-wide interventions, including further refinement of the KOS-Zawał program, are essential to optimize the utilization of funds invested in this scheme. Implementing digital solutions and a dedicated system of alerts for prescribers and patients is recommended to address these challenges and improve overall patient outcomes.

healthcare practices, demonstrated that over 80% of them had dyslipidemia [2]. WOBASZ II — a cross-sectional survey of random samples of the Polish population performed in the years 2013–2014 — found hypercholesterolemia present in 70.3% of men and 64.3% of women [3]. The NATPOL 2011 study found dyslipidemia present in 61.1% of adults [4]. Therefore, it could be estimated that approximately 20 million Polish adult citizens are affected by this condition.

The principal strategy of primary and secondary prevention of ASCVD is the effective management of dyslipidemia. Of utmost importance is to decrease elevated levels of serum lipids, at first targeting low-density lipoprotein-cholesterol (LDL-C) levels. This could be obtained through lifestyle modifications, combined (in most cases) with lipid-lowering therapies. Therefore, current Polish guidelines on dyslipidemia management recommend long-term, usually lifelong therapies with lipid-lowering drugs to reduce the cardiovascular risk [5].

Over the last few years, several new drugs have been made available to address this problem. However, due to their high effectiveness, positive safety profile, and affordability, it is statins that play the leading role in the effective management of this problem [6]. These medications are widely prescribed for lifelong use for primary and secondary prevention in patients with high cardiovascular risk, such as coronary artery disease (CAD) patients, and particularly those with acute coronary syndrome.

Preventing ASCVD is of fundamental importance to public health. Therefore, in 2004, the Polish national payer, i.e. the National Health Fund, designed a Program for Cardiovascular Disease Prevention (PCVDP). The program included extensive screening in primary care settings, which aimed to identify patients with hypercholesterolemia, and then to provide appropriate care to high-risk patients. It was introduced on a nationwide scale and turned out to be an effective tool to identify individuals with hypercholesterolemia. Unfortunately, it did not succeed in reducing the CV risk in real-world settings and failed to achieve the recommended treatment targets [7].

Likewise, subsequent epidemiological studies illustrated the very low effectiveness of dyslipidemia management in Poland. The 3ST-POL study evaluated the effectiveness of statin therapy in high-risk Polish outpatients and found that only 9.5% of them obtained currently recommended values for total cholesterol, and 12.6% of LDL-C [8]. In the WOBASZ II study, 60.6% of patients with hypercholesterolemia were not aware of their condition, whereas only 6% were treated and achieved the treatment target [3].

There are multiple reasons for this scenario. One of them is that dyslipidemia is a typically asymptomatic condition, which often leads to medication non-adherence. Patients fail to adhere to the treatment in different ways, which is reflected in all three phases of adherence as defined by the Ascertaining Barriers for Compliance terminology, namely they do not initiate the therapy, poorly execute it daily, and discontinue it (which is referred to as poor persistence) [9]. Our recent analysis of statin use in a national cohort of Polish patients in the years 2020–2022 demonstrated that these cases of non-adherence are quite common [10]. Lack of adherence is regrettable, as statin discontinuation has been linked to elevated risks of major adverse cardiovascular events, hospitalization, and deaths. It also carries significant economic implications [11, 12].

Several factors contribute to poor medication adherence. A model created by the World Health Organization points to 5 distinct clusters of these factors. They encompass health system, therapy, condition, patient, and socioeconomic factors [13]. Having this in mind, patients cannot be solely blamed for failing to adhere to recommended therapy. On the contrary, they should be continuously supported in maintaining compliance with long-term therapies in their home settings [14].

This idea forms the basis of coordinated care, which has been extensively used in Poland. The Polish healthcare system faced challenges in achieving satisfactory survival rates for acute myocardial infarction (AMI) patients despite widely available interventional cardiology services. More than 1 in 4 patients discharged after hospitalization for AMI died within 5 years [15]. In response to this serious concern, in October 2017, a dedicated program of coordinated care, KOS-Zawał (English name: "Coordinated Care-AMI", later abbreviated as CC also in this article) was introduced [16]. It addresses the challenge of fragmented health delivery for high-risk patients. To bridge the gaps and ensure follow-up continuity, it applies the principle of vertical inte-

gration, creating close links between tertiary, secondary, and primary care. This comprehensive program comprises four key pillars: 1) inpatient therapy, 2) coordinating visits, 3) cardiologic rehabilitation, and 4) coordinated secondary care throughout the first year following an AMI event. Interestingly, one of the key performance indicators of this program, for which the participating healthcare providers are financially incentivized, is the effectiveness of lipid-lowering therapies. Thus, based on the relevant indicator, bonuses are awarded to those providers who can obtain the level of LDL-C ≤55 mg/dl in at least 40% of their patients, at year one of the follow-up [17].

There is evidence that the KOS-Zawał program produces positive outcomes and better survival rates in post-AMI patients in a short-term perspective [18, 19]. However, the long-term effectiveness of this program has not yet been evaluated. Systematic execution of evidence-based therapies, such as lipid-lowering treatment with statins, is of key importance for its sustained success. Therefore, we thought it was necessary to examine in detail its ability to prevent statin therapy discontinuation. Consequently, this study aimed to analyze the level of statin discontinuation among high-risk CAD patients in Poland and establish whether the coordinated care program lowers the chances of this discontinuation.

METHODS

This was a retrospective analysis of the nationwide datasets of the Polish national payer organization (National Health Fund, Polish name: "Narodowy Fundusz Zdrowia") and e-Health Centre (Polish name: "Centrum e-Zdrowia"), focusing on the period from January 1 to December 31, 2022.

Patients

Patients were eligible for inclusion in the analysis if they were still alive on December 31, 2022 (as per national identification number register PESEL) and belonged to at least one of the groups defined below:

1. Post-AMI group — individuals with myocardial infarction (ICD 10 codes I21–I23) as the principal diagnosis, with this diagnosis recorded no earlier than 24 months before the end of the analysis period (i.e., between January 1, 2021 and December 31, 2022);
2. Post-PCI/CABG group — individuals for whom at least 1 percutaneous coronary intervention (PCI), or coronary artery bypass graft surgery (CABG) procedure was reported no earlier than 24 months before the end of the analysis period (i.e., between January 1, 2021 and December 31, 2022);
3. KOS-Zawał group — individuals for whom participation in the KOS-Zawał coordinated care program was reported no earlier than 12 months before the end of the analysis period (i.e., between January 1, 2022 and December 31, 2022).

It is noteworthy that the same individual could belong to 2 or 3 of the above-mentioned groups.

Medication analysis

The primary focus of this analysis was statins, i.e., lipid-modifying agents that are 3-Hydroxy-3-Methyl-Glutaryl-Co-enzyme A reductase inhibitors. It included both drugs formed from a single chemical compound and a fixed-dose combination of lipid-lowering medications, whereas fixed-dose drugs containing statins and non-lipid-lowering drugs were not taken into consideration. Therefore, the drugs included in the analysis corresponded with the codes of the Anatomical Therapeutic Chemical (ATC) classification provided below:

- Statins (ATC code: C10AA);
- Fixed combinations of statins and other lipid-modifying agents (ATC codes: C10BA01–C10BA09, C10BA11, and C10BA12).

Source data

The study utilized data obtained from the nationwide e-prescription system, which were selected according to the combination of the target patient group and the relevant drugs of interest. Each record contained information on the date of prescription, details of the prescribed drug (such as the trade name, dose, number of packs, number of tablets dispensed, etc.) and date of dispensation (if it had taken place). For further analysis, the original prescription and dispensation data were expressed in units of tablets.

Notably, Polish regulations support prescribing and dispensing of the drugs in original packs, as manufactured. However, packs differ in size, most often containing either 28 or 30 tablets or a multiplicity of these numbers. Adopting one tablet as the basic unit for this analysis allowed us to avoid a potential bias resulting from various pack sizes. Moreover, Polish legislation permits generic substitution, and thus a drug specified in a prescription may be substituted by another drug with the same active compound and potency. Therefore, for this analysis, all the drugs containing statins corresponding to one of the above-listed ATC codes were considered interchangeable, and the daily dose was considered one tablet, regardless of the compound and dosage prescribed.

Discontinuation definition

Discontinuation of the therapy was deemed to occur when the patient ran out of statins due to non-dispensation, regardless of the fact whether the patient was prescribed a new supply or not. Discontinuation was defined as a failure to collect a medication within 60 days after the supply was dispensed counting from the time the preceding e-prescription had run out. Consequently, discontinuation was deemed to occur when a patient refrained from refilling their statin medication for a period exceeding 60 days.

Statistical analysis

Statistical analysis involved descriptive statistics of dispensing. All the data were expressed with weekly granularity. Categorical variables were expressed as proportions and

Table 1. Characteristics of the patients included in the analysis: distribution according to the clinical and therapeutic criteria

Group	Detailed characteristics		
Post-AMI*	**Diagnosis (ICD 10 code)**	**n**	**%**
	Acute myocardial infarction (I21)	134 775	99.5
	Recurrent myocardial infarction (I22)	992	0.7
	Certain complications occurring during acute myocardial infarction (I23)	561	0.4
	Together	**135 491**	**100.0**
Post-PCI/CABG*	**Procedure (code)**	**n**	**%**
	Unspecified coronary angioplasty (36.091)	117 010	65.7
	Introduction of one drug-eluting stent into the coronary artery (36.070)	114 994	64.6
	Percutaneous coronary intervention with balloon angioplasty (00.661)	79 258	44.5
	Introduction of two drug-eluting stents into the coronary artery (36.071)	49 391	27.7
	Introduction of three drug-eluting stents into the coronary artery (36.072)	13 253	7.4
	Internal mammary artery to coronary artery bypass (single vessel) (36.15)	12 211	6.9
	Introduction of a drug-eluting balloon into the coronary vessels (00.663)	6 431	3.6
	Aorto-coronary bypass grafts (2 coronary arteries) (36.12)	6 132	3.4
	Aorto-coronary bypass graft (1 coronary artery) (36.11)	5 130	2.9
	Introduction of four drug-eluting stents into the coronary artery (36.073)	2 874	1.6
	Together	**177 994**	**100.0**
KOS-Zawał*	**Status**	**n**	**%**
	Ongoing	17 914	63.7
	Completed	10 214	36.3
	Together	**28 128**	**100.0**

Note: Some patients belonged to 2 or 3 groups concurrently

Abbreviations: AMI, acute myocardial infarction; CABG, coronary artery bypass graft; ICD 10, the 10th revision of the International Statistical Classification of Diseases and Related Health Problems; KOS-Zawał, KOS-Zawał coordinated care program; PCI, percutaneous coronary intervention

compared between relevant groups using the χ^2 test. For comparison of the groups covered and those not included in the CC program, the relative risks (RR) with 95% confidence intervals (CI) were calculated. RR was chosen as the measure of risk being both more intuitive in interpretation, and a tendency to avoid overestimating the association between an exposure and an outcome [20]. The logistic regression model was used to assess the effects of age, sex, and therapeutic group on statin discontinuation rate. A *P* value of less than 0.05 was considered significant. For calculations, we used Statistica 13.1 software (TIBCO Software Inc.) and free online software (MedCalc Software Ltd. https://www.medcalc.org).

Ethical issues

The source data were fully anonymized. Similarly, all the findings were reported in an aggregated manner, and no individual data were disclosed. Therefore, in accordance with the regulations of the Ethical Committee of the Medical University of Lodz, the study did not require ethical approval.

RESULTS

In the analyzed period, as many as 214 649 patients met the inclusion criteria. In this group, 135 491 were post-AMI and 177 994 post-PCI/CABG patients, whereas 28 128 were included in the coordinated care KOS-Zawał program (with the subgroups overlapping significantly). Tables 1 and 2 provide more details of patient demographics as well as clinical and therapeutic characteristics.

Details of patient characteristics and their distribution across the therapeutic groups are presented in Table 2. Of the total number of post-AMI patients, 98 839 (72.9%) underwent either PCI or CABG, and 28 120 (20.8 %) were included in the KOS-Zawał coordinated care program. Among post-PCI/CABG patients and all CAD patients, the levels of this coverage were 15.0%, and 13.1%, respectively.

Statin discontinuation occurred in 20.1% of post-AMI, 14.8% of post-PCI/CABG, and 18.3% of all CAD patients (*P* <0.001, Figure 1). However, in those subjects who were included in the KOS-Zawał program, discontinuation was observed less frequently. The coordinated care program reduced statin discontinuation risk among the post-AMI patients (RR, 0.49; *P* <0.0001; 95% CI, 0.47–0.51), the post-PCI/CABG patients (RR, 0.68; *P* <0.0001; 95% CI, 0.66–0.71) as well as all the analyzed CAD patients (RR, 0.57; *P* <0.0001; 95% CI, 0.55–0.59). In each of the three above-mentioned groups, those patients who were included in the coordinated care program, discontinued statin therapy less often, as compared with standard care subgroups (*P* <0.0001, see Figure 2). The difference was most remarkable (more than twofold) among the post-AMI patients, in whom discontinuation rates were 11.0% and 22.5% in the coordinated care and standard care groups, respectively (*P* <0.0001). Of the three parameters included in the logistic regression model, the therapeutic group had the greatest effect on preventing statin discontinuation, with a KOS-Zawał odds ratio of 0.51 (95% CI, 0.50–0.53) (see Figure 3). Nevertheless, it is noteworthy that statin discontinuation also occurred in 1/9 (11.0%) of all the coordinated care patients (Figure 1).

Table 2. Distribution of the patients across the therapeutic groups

	Post-AMI (n = 135 491)	Post-PCI/CABG (n = 177 994)	CAD (n = 214 649)
Mean Age (SD)	67.10 (11.87)	68.11 (10.23)	67.86 (10.93)
Age group	**n (%)**	**n (%)**	**n (%)**
<55 y	19 623 (14.5%)	17 700 (9.9%)	24 422 (11.4%)
55–64 y	31 802 (23.5%)	41 334 (23.2%)	48 912 (22.8%)
65–79 y	63 810 (47.1%)	96 142 (54.0%)	111 804 (52.1%)
≥80 y	19 953 (14.7%)	22 817(12.8%)	29 207 (13.6%)
Not known	303 (0.2%)	1 (0.0%)	304 (0.1%)
Gender	**n (%)**	**n (%)**	**n (%)**
Female	46 584 (34.4%)	54 322 (30.5%)	70 697 (32.9%)
Male	88 732 (65.5%)	123 671 (69.5%)	143 776 (67.0%)
Not known	175 (0.1%)	1 (0.0%)	176 (0.1%)
Therapeutic group	**n (%)**	**n (%)**	**n (%)**
KOS-Zawał	28 120 (20.8%)	26 626 (15.0%)	28 128 (13.1%)
Standard care	107 371 (79.2%)	151 368 (85.0%)	186 521 (86.9%)
TOTAL	**135 491 (100.0%)**	**177 994 (100.0%)**	**214 649 (100.0%)**

Note: Some patients belonged to 2 or 3 groups concurrently. The CAD group collectively covers both post-AMI and post-PCI/CABG patients

Abbreviations: AMI, acute myocardial infarction; CABG, coronary artery bypass graft; CAD, coronary artery disease; KOS-Zawał, KOS-Zawał coordinated care program; PCI, percutaneous coronary intervention; SD, standard deviation
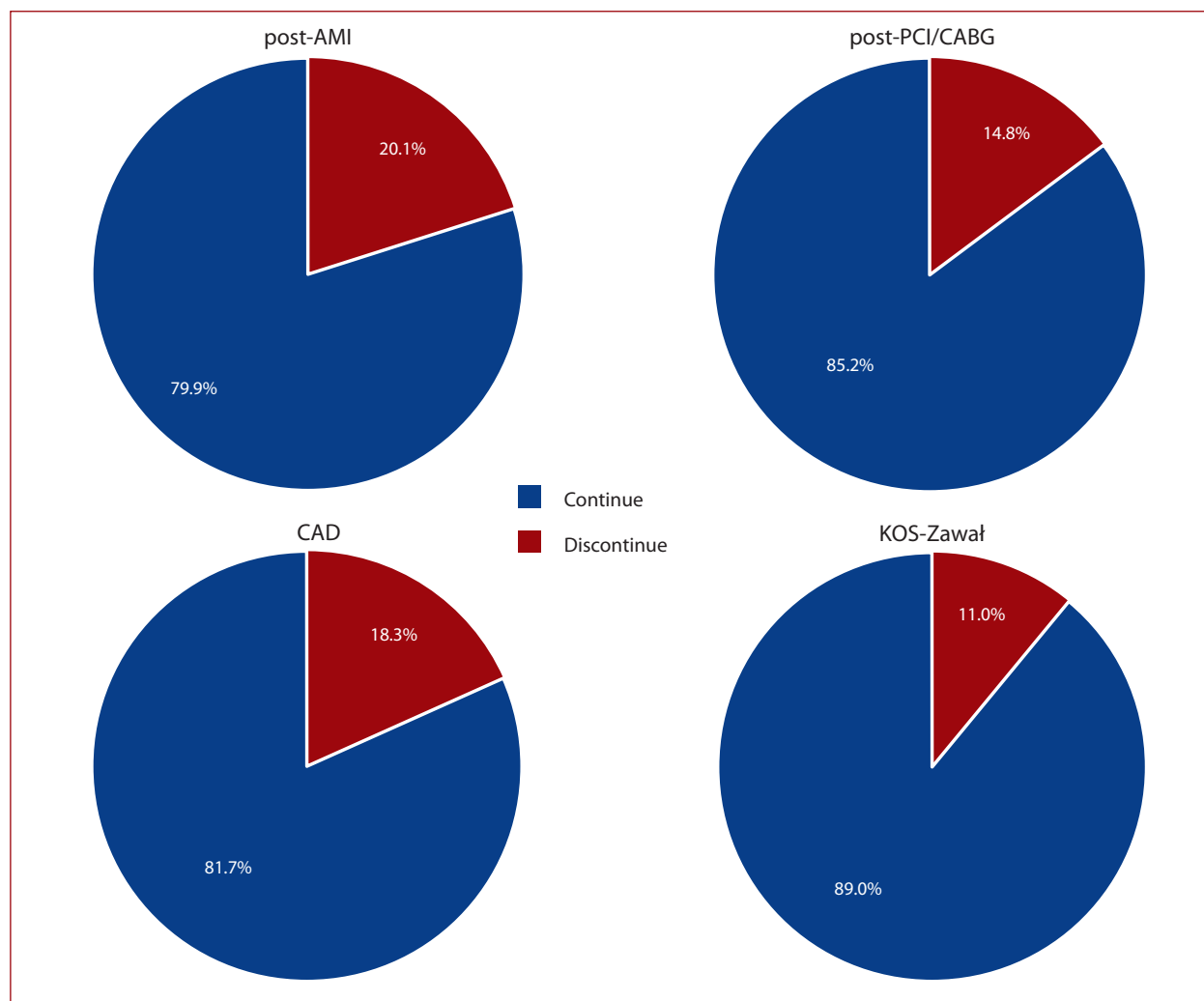
Figure 1. Statin discontinuation rates across the groups of the analyzed high-risk CAD patients in Poland
Note: Some patients belonged to more than 1 group concurrently. The CAD group collectively covers both post-AMI and post-PCI/CABG patients

Abbreviations: AMI, acute myocardial infarction; CABG, coronary artery bypass graft; CAD, coronary artery disease; KOS-Zawał, KOS-Zawał coordinated care program; PCI, percutaneous coronary intervention
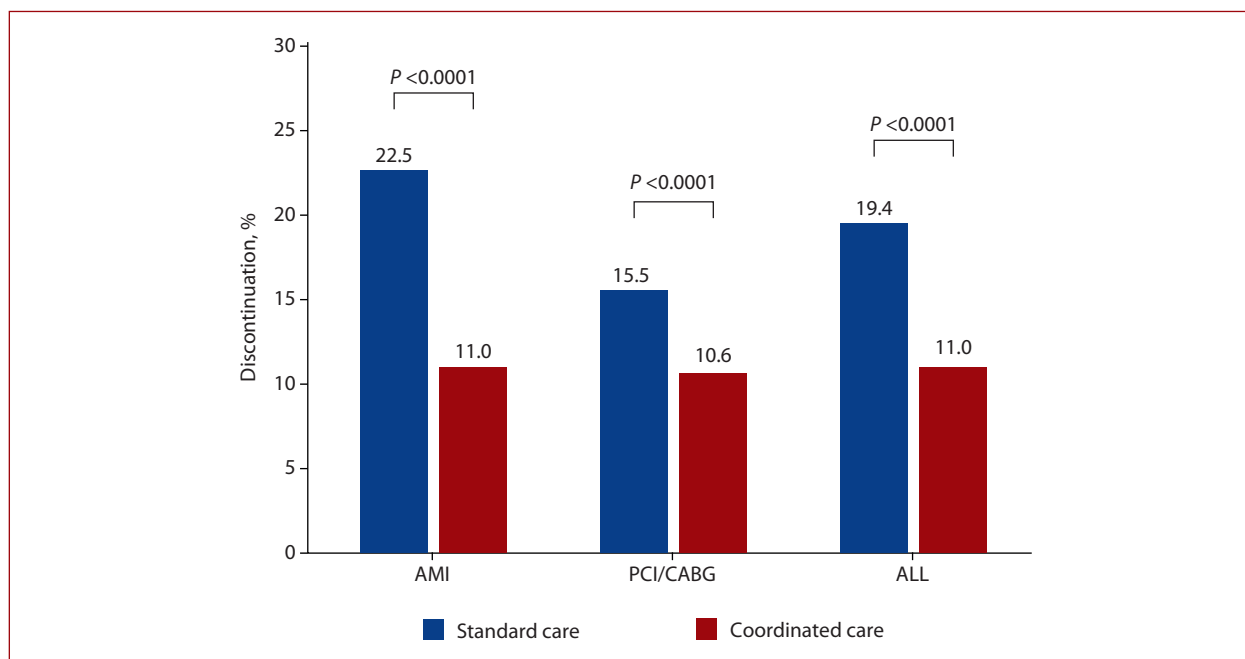
Figure 2. Effects of the KOS-Zawał coordinated care program on the rate of discontinuation of statins in various groups of high-risk CAD patients in Poland
Note: Some patients belonged to both AMI and PCI/CABG group

Abbreviations: see Figure 1
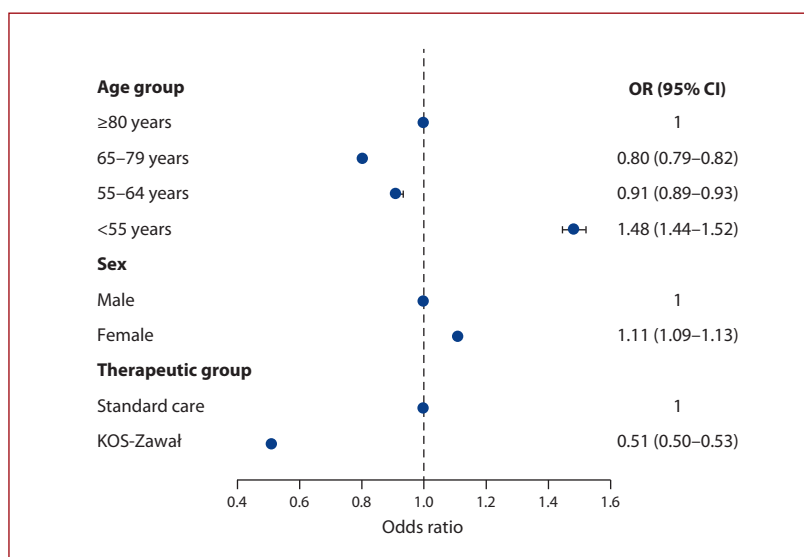
Figure 3. Odds ratios for the association of age, gender, and therapeutic group and the risk for statin discontinuation
Abbreviations: CI, confidence interval; OR, odds ratio

DISCUSSION

Between 2018 and 2022, Poland experienced an annual occurrence of 70 000 to 80 000 cases of AMI. Over this period, there was a consistent upward trend in the proportion of these cases included in the KOS-Zawał program, reaching 25.0% in 2022. This increase was associated with observable improvements. There is evidence indicating that this coordinated care program had a positive impact on survival rates [18]. A recent study assessed the mid-term effects of the CC program and found that after three years, the relative risk reduction in the KOS-Zawał group was notable, with a 25% decrease in major adverse cardiac and cerebrovascular events, 38% in mortality, and 28% in hospitalization for heart failure, as compared to standard care [21].

What our results add to these statistics is both good and bad news. The former is related to reduced discontinuation of statin use in the KOS-Zawał group. The latter draws attention to another aspect: every ninth patient

included in the coordinated care program discontinued statins within one year from the initiation of the service despite the program's emphasis on reducing LDL-C levels as a key performance indicator.

The effectiveness of statins is negatively affected by suboptimal execution of therapy in real-life settings. Unfortunately, despite strong evidence from basic and clinical studies and recommendations in the current guidelines, a large proportion of high-risk CVD patients discontinue their statin therapy. Such non-adherence leads to ineffectiveness in LDL-C level reduction in both primary and secondary prevention [11]. Consequently, it significantly elevates the risk of fatal and nonfatal cardiovascular events, hospitalization, as well as mortality, particularly in secondary prevention [22, 23]. In fact, it has been confirmed that individuals not complying with statin therapy recommendations face an elevated risk of CVD (ranging from 1.22 to 1.67), and mortality risk (ranging from 1.79 to 5.00) [24].

It is important to emphasize that this risk remains even if other treatments are continued. In a study of patients receiving polypharmacy, discontinuing statins while maintaining other drug therapies was associated with an increase in the long-term risk of fatal and nonfatal cardiovascular outcomes. As compared to the adhering group, patients in the discontinuing group exhibited elevated risk of hospital admissions for heart failure, emergency admissions for any cause, and deaths from any cause (hazard ratio 1.24, 1.12, and 1.15, respectively) [25]. Non-compliance with statin therapy also has a profound impact on hospitalization costs and other CVD-related costs [12].

For these reasons, ensuring good compliance with statins is of paramount importance. Unfortunately, this appears to remain a problematic issue in Poland, as illustrated by the POLASPIRE study conducted between 2016 and 2018, i.e., before the introduction of the KOS-Zawał program. The study indicated that 62.0% of individuals, assessed 6–18 months after hospitalization for CAD (including AMI, unstable angina, PCI, and CABG), exhibited elevated LDL-C levels [26].

Certainly, it is not only Poland that needs to meet this challenge. Among patients who began statin use for secondary CVD prevention in Scotland, 12.0% discontinued within the first 1.5 years of initiation, and this figure increased to 19.2% within 3.5 years [27]. In Taiwanese patients, after hospital discharge for new onset of ASCVD, adherence to statin treatment was 86, 67, 50, and 25% after 6 months, 1 year, 2 years, and 7 years, respectively [28]. A meta-analysis involving over 3 million older statin users from 82 studies conducted in over 40 countries showed that 76.7% were taking statins after 1 year (76.0% for primary prevention and 82.6% for secondary prevention), whereas after 2 and 4 years, the adherence rates dropped to 68.1% and 61.2%, respectively [29]

Therefore, optimization of the existing system for dyslipidemia management in Poland is imperative. The evident and significant clinical repercussions stemming from the discontinuation of statin therapies in high-risk cardiovascular patients undeniably stress the urgency for such an improvement. Public resources fund both in- and outpatient services. Reimbursement for the KOS-Zawał program in the years 2017–2022 amounted to nearly 300 million Euros [18]. These troubling statistics highlight substantial financial burdens on the national healthcare system. Therefore, there is an urgent need for system-wide interventions to address this problem. Efforts should be directed towards further optimizing of the KOS-Zawał program, ensuring better coordination and information flow as well as long-term patient involvement. In light of our findings, it may also be beneficial to consider extending a similar support to other high-risk CAD patients, and other major CV therapies. Strategic adoption of digital solutions by all stakeholders appears to be an advisable approach to address the existing challenges. Additionally, it might be highly beneficial to introduce a dedicated system of alerts for both prescribers and patients, which would remind them to renew prescriptions and monitor drug dispensation.

Limitations

This study has several limitations. First, our source data did not hold information on the clinical characteristics of patients included in the analysis. Therefore, details of their comorbidities and other relevant clinical details were unavailable. Moreover, due to the use of dispensation data only, the study could not assess the extent to which dispensed medications were used by patients. Relying on the number of tablets dispensed, we could underestimate non-adherence as patients could stop drug-taking before running out of the supply. Second, we do not have information regarding the extent of prescriber-initiated discontinuation of statins, discontinuation related to adverse effects, etc. Moreover, instead of statins, some patients could have been prescribed other lipid-lowering drugs which were not included in this analysis. Finally, with lack of a standard threshold applicable to adherence studies, we applied the arbitral value of 60 days. However, certain studies embrace alternative values, which can make it difficult to compare study results.

Nevertheless, our study has various strengths. First of all, the research was conducted on a large national real-world database including 38 million citizens, which was feasible due to the electronic prescribing system introduced at the national level in Poland. Moreover, by analyzing dispensation data, we managed to capture a much more objective image of patient behavior than the studies using prescribing data only. Notably, our recent study showed that as many as 15.9% of statins prescribed to Polish patients were not dispensed [10].

CONCLUSIONS

Our results confirm the efficacy of the coordinated care program in mitigating the risk of statin discontinuation in

high-risk CAD patients. However, they also underscore a significant disparity between therapeutic recommendations and their execution, with a substantial 11.0% of patients discontinuing therapy even in the coordinated care setting. Therefore, there is an urgent need for systemic interventions to address the problem of limited effectiveness of dyslipidemia management in high-risk CAD patients in Poland. This requires immediate adaptation of the KOS-Zawał program to optimize the utilization of funds invested in this intervention. Strategic adoption of digital tools, such as a dedicated system of alerts for prescribers and patients, is a potential solution to address the existing challenges.

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