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SHORT COMMUNICATION

A novel survey examining the level of knowledge about anticoagulant and anti-infectious prophylaxis in patients after mechanical cardiac valve implantation

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INTRODUCTION

In times of novel technology and more advanced mechanical heart valve prostheses, subsequent surgical outcomes are closely related to the treatment modalities used.

The aim of this study was to develop and validate a new questionnaire, the Silesian Centre for Heart Diseases Mechanical Valve Knowledge Questionnaire (SCHDMVKQ), in order to test the knowledge about self-control of anticoagulant treatment and prevention of infections among patients after mechanical cardiac valve implantation.

METHODS

Development of the questionnaire

The SCHDMVKQ (**Supplementary files online — see journal website**) was developed based on an informational booklet entitled "Patient ID with a mechanical heart valve" which was available to patients in print and electronic format. The questionnaire consisted of 28 detailed questions; the first five relating to the demographics (age, sex, education, occupational status, place of residence, and socioeconomic conditions), followed by a question on the type of surgery performed.

Further sections of the questionnaire were divided into four thematic areas:

1 The ability to monitor basic life parameters (questions 7–8);
2 Knowledge about the anticoagulant therapy: names of the drugs, dosage, and dangers associated with anticoagulant treatment (questions 9–21);
3 Knowledge about the impact of diet, medication, and alcohol consumption on anticoagulation (questions 22–26);
4 The ability to recognise and eliminate risk factors for infective endocarditis (questions 27–28).

We opted for a format involving multiple-choice questions with one correct answer.

Population and procedure

The study included 62 patients (42 men, 20 women) after the implantation of an artificial heart valve. The mean age of the population was 54.9 ± 10.11 years. A total of 47 patients underwent aortic valve implantation and 15 had a mitral valve replaced. The respondents were mostly people with secondary level of education (59.7%), living in the city (85.5%), with no professional activity (62.9%), who described their housing and material conditions as good (79.0%) (Fig. 1).

Patients younger than 18 years and patients treated with vitamin K antagonists (VKAs) before the operation were excluded.

SCHDMVKQ validation

Three expert panels (five cardiologists, 10 cardiac surgeons, and eight nurses) were consulted to ensure the validity of the SCHDMVKQ content. Patients were asked to fill out the questionnaire on the fifth day after the surgery and on the third day after receiving the informational booklet about the anticoagulation and prophylaxis of endocarditis and the introduction of VKA. The entire questionnaire took 14.2 min to complete.

Statistical analysis

Statistical analysis was performed using Microsoft® Office Excel 2010 (Microsoft Corporation, Warsaw, Poland) and the Statistica 10 (StatSoft, Inc., Tulsa, OK, USA) software. Percentages of the analysed data were compared using the significance test.

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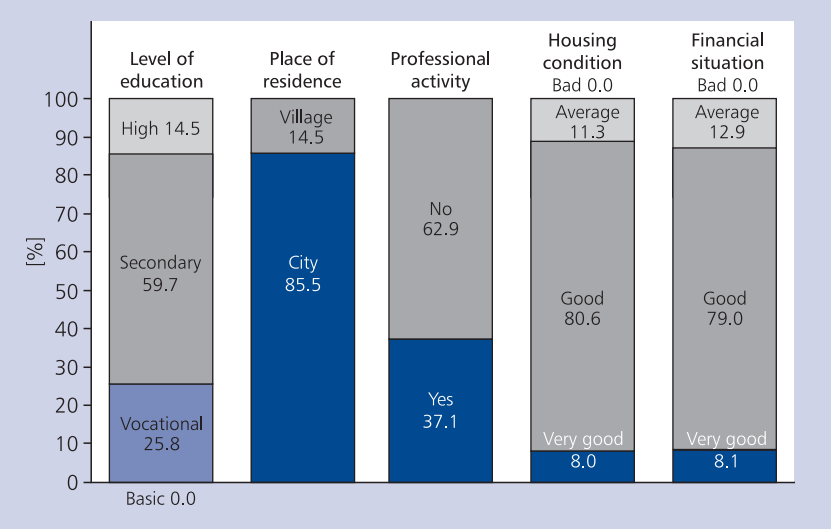

Figure 1. Sociodemographic characteristics of the respondents

Table 1. The number of correct answers in four thematic areas according to the sex of the respondents

Thematic scope	All patients (n = 62)	Men (n = 42)	Women (n = 20)	p		
				All vs. men	All vs. women	Men vs. women
Area one	43 (69)	28 (45)	19 (48)	0.24	0.52	0.66
Area two	58 (94)	58 (94)	60 (98)	0.65	0.13	0.34
Area three	50 (80)	47 (76)	50 (88)	0.51	0.68	0.54
Area four	60 (97)	59 (96)	61 (99)	0.33	0.32	0.22

Data are shown as number (percentage).

The correctness of responses was counted as the number of questions in a given thematic scope multiplied by the size of the test group. The difference was assumed to be significant at the level of $p < 0.05$.

RESULTS AND DISCUSSION

According to the thematic scope, the correctness of responses given by all respondents ranged from 69% to 97%. There were no significant differences between the answers of the surveyed women and men, similarly to the studies by Rewiuk et al. [1] and Sawicka-Powierza et al. [2] on the knowledge of anticoagulation in patients with atrial fibrillation (AF) (Table 1).

The correctness of the answers did not depend on the place of residence or the professional activity of the respondents.

Chan et al. [3] and Masaki et al. [4] emphasised the importance of educating patients treated with oral VKAs about influence of drugs, diet, or alcohol use on anticoagulation. Our results showed that 80.2% of the respondents presented a satisfactory knowledge of these aspects. As in the questionnaire by Desteghe et al. [5], patients with higher education had a significantly better knowledge than patients with vocational education (97.6% vs. 60.9%, $p = 0.04$).

There was no statistically significant difference between particular age groups.

Similarly to the group of patients with AF examined by Amara et al. [6], over 90% of our subjects showed knowledge of the name and dosage of the anticoagulant, the risk associated with anticoagulant therapy, and the possibility of self-correcting this therapy.

Levine et al. [7] showed that the risk of severe bleeding in patients receiving long-term oral anticoagulant treatment with vitamin K antagonists ranges from 0.1% to 6.5% per year, while the risk of death from bleeding is 0.1% to 1.0% per year. In the study group, nearly 95% of the respondents were able to identify symptoms that may be the result of an overdose of anticoagulants, such as epistaxis or gingival bleeding, easy bruising without any injury or after a minor injury, haemoptysis, and melaena.

Laplace et al. [8] demonstrated that the first month after the implantation of a mechanical heart valve is associated with a high risk of thromboembolism. During that time, the

international normalised ratio (INR) should be controlled at least every two weeks, as declared correctly by 83.9% of our respondents.

It has been shown that self-control of anticoagulation reduces INR variability and hence the incidence of complications. When the patients were asked about any modifications of the anticoagulant doses, more than a half (69.4%) replied they thought this should be a decision of the family doctor.

With respect to the question on the need to use INR measuring devices at home, 86.8% of the respondents considered it desirable to do so.

Trzeciak et al. [9] showed that patients with cardiac valve disease comprise 10% to 30% of all cases of endocarditis, especially in the first five to six weeks after implantation. In our study, 97% of respondents showed knowledge of endocarditis prophylaxis.

The respondents of the SCHDMVKQ had good knowledge about the anticoagulant therapy because each of them received their own informational booklet with educational materials to help them understand the rules that should be followed after surgery. Trzeciak et al. [10] emphasised that it is compulsory for patients to have these materials at their disposal, and the specialists in the fields other than cardiology or cardiac surgery can also benefit from them, as regards the rules of postprocedural care.

In conclusion, prior to discharge from the cardiac surgery department, each patient after mechanical cardiac valve implantation should receive educational materials on antithrombotic and endocarditis prophylaxis. Each cardiac surgery department should conduct a questionnaire verifying the knowledge contained in the educational materials to avoid complications in the future.

Conflict of interest: *none declared*

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