

# The fog over heart failure epidemiology in Poland has just started to rise

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by [Puch-Walczak et al](#)

Heart failure (HF) has become a global epidemic within the last half a century. The reasons are complex and comprise a longer life span in higher-income populations, lower birth rates, development of new and unsuccessful control of previously known cardiovascular risk factors, and better results of the treatment of acute cardiovascular diseases. Recent estimates based on the Global Health Data Exchange suggest that more than 64 million of people worldwide suffer from different stages of HF.<sup>1</sup>

It is embarrassing that despite long-lasting attempts of the Working Group of Heart Failure, a branch of the Polish Society of Cardiology, Poland is one of the few European countries that still does not have a national registry of HF. Therefore, the key epidemiological characteristics, such as the prevalence and incidence of HF in Poland, are extrapolated from other European registries, usually including populations with lower cardiovascular risk.<sup>2</sup> Most often it is claimed that the prevalence of HF in Poland is about 1% to 2%; however, there is no solid evidence from representative national data that would corroborate this estimation. In fact, a recent systematic review of 790 studies clearly showed a large variation of the prevalence, incidence, and mortality of HF, depending on the methods used for classification of patients as those with HF, and likely due to variations of HF biology in different countries.<sup>2</sup> Thus, reliance on external data may lead to a significant error in the assessment of true HF prevalence.

Obviously, an imprecise estimation going into hundreds of thousands of affected individuals precludes rational health care organization, does not allow for diagnostic and treatment planning and, finally, hinders proper resource utilization related to HF. The depressing deficit of basic epidemiological information on HF in Poland could have been at least partially resolved by the Coordinated Heart Failure Care Project.<sup>3</sup> Its mindless

discontinuation buried the hopes for the build-up of a health care network that would respond to the social, clinical, and economic challenges of the HF epidemic.

As a result, all previous practices are still maintained, with their summary effect documented in the last 2019 Report of the Organization for Economic Co-operation and Development (OECD). It shows that in Poland, the rates of the costly and possibly partially preventable hospitalizations for HF are the highest in the OECD, and more than twice as high as the OECD average.<sup>4</sup> Thus, solid data on the HF epidemiology at the population level in Poland are urgently needed.

The study by Puch-Walczak et al,<sup>5</sup> published in the current issue of *Polish Archives of Internal Medicine (Pol Arch Intern Med)* is a good step forward. The paper describes the prevalence of self-reported HF symptoms in 2413 individuals included into the nationally representative NATPOL 2011 database. This retrospective analysis based on self-reporting of potential HF symptoms allowed for identification of 104 individuals, that is, 4.3% of all included participants, declaring to have HF. Additionally, the authors attempted to double-check the diagnosis of HF by searching for administrative data on HF-related hospitalizations or ambulatory visits reimbursed by the National Health Fund. These data confirmed the potential HF diagnosis in 2.4% of people included in the NATPOL 2011 database, that is, more than half of the patients who declared having HF. All these estimates exceeded the previously mentioned ungrounded beliefs of the HF prevalence between 1% and 2%. In fact, the true prevalence might be even higher for reasons discussed below.

The data provided by the recent analysis of the NATPOL 2011 database<sup>5</sup> have limited representativeness for at least 2 reasons. First, the response rate to the questionnaires was only 66% and we do not know the characteristics of the nonresponders. It is possible that the more

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ill people, for example, those with more severe symptoms of HF, did not respond. If this assumption was true, the real prevalence of HF might be higher. More importantly, however, the age of participants was truncated at 79 years. The excluded age strata comprised octogenarians and older people, who are known to have a very high risk of HF. According to a recent report published in 2021 by Statistics Poland, about 1.6 million of Poles are at the age of over 80 years.<sup>6</sup> If we assumed the prevalence of HF among these elderly people to be between 10% and 20%, it would mean up to 320 000 unreported individuals with HF. This number would have increased the prevalence of HF in the overall population by 0.7% to 0.8%.

Another important question is whether self-reporting of potential HF symptoms alone may provide valid information on the presence of HF. The Rotterdam Study<sup>7</sup> showed no correlation between the symptoms and the systolic function of the left ventricle. In that study, only 10 out of 35 persons deemed to have HF by symptoms and signs had echocardiographic evidence of left ventricular dysfunction, and only 24 out of 60 patients with systolic dysfunction had at least 1 of the cardinal signs or symptoms of HF.<sup>7</sup> Thus, relying only on self-reporting without imaging verification or the use of other methods may lead to a significant bias.

Recent studies suggest that verification based on administrative data leaves about a quarter of HF cases uncaptured but is valid enough provided that hospital-based records are used.<sup>8,9</sup> Thus, the prevalence of 2.4% reported by Puch-Walczak et al<sup>5</sup> based on administrative claims should probably be increased by about 0.8%, yielding an estimated prevalence of 3.2%.

Another aspect that could potentially change the estimated prevalence of HF is the high risk of misclassification. When we look into comorbidities reported in people not declaring HF in the NATPOL 2011 database, we see a surprisingly high frequency of atrial fibrillation. It was recognized in as many as 10.6% of this group and was at least thrice more frequent than the rate documented using a validated method in the general population of 75 945 persons in Sweden.<sup>10</sup> The symptoms of atrial fibrillation are pretty similar to those of HF; therefore, some persons who in fact had HF may have well been reported as having atrial fibrillation. The phenomenon of under-recognition of HF in patients with atrial fibrillation was pointed out by several studies.<sup>11</sup> If confirmed, this misclassification would further increase the prevalence of HF in the study by Puch-Walczak et al.<sup>5</sup>

Chronic kidney disease assessed by the presence of reduced estimated glomerular filtration rate is unexpectedly rarely recognized in people not declaring symptoms of HF. In the cohort analyzed by Puch-Walczak et al,<sup>5</sup> it was only 5.8%, while based on many European surveys, a more realistic number is around 10%.<sup>12</sup> In the PolSenior study comprising patients above 65 years, N-terminal pro-B-type natriuretic

peptide (NT-proBNP) levels above 2000 pg/ml, often regarded as a strong signal for HF diagnosis, were found in more than 70% of patients with an estimated glomerular filtration rate below 60 ml/min.<sup>13</sup> Again, the symptoms of chronic kidney disease and HF are quite similar, which makes misclassification of chronic kidney disease as HF very likely. This time, such an erroneous classification would decrease the actual number of individuals with HF.

In their attempt to identify patients with HF more precisely, the authors used NT-proBNP levels to confirm the HF diagnosis. They adopted NT-proBNP levels above 125 pg/ml as those suggestive of HF. In fact, the average NT-proBNP level in people self-reporting HF was much higher than in those without such a declaration. Nevertheless, due to a wide variation of NT-proBNP levels, in as many as 36.8% of participants declaring symptoms of HF the NT-proBNP levels were below this threshold. Of note, the above-mentioned threshold was shown to have a strong negative predictive power for a diagnosis of HF, and in the current guidelines it is suggested as a rule-out for HF.<sup>14</sup> Thus, it is unclear whether persons with low NT-proBNP levels are free of HF or suffer from HF in remission according to the universal definition of HF.<sup>15</sup>

The last important aspect is the question of topicality. The NATPOL 2011 study was completed in 2010. Since then, many diagnostic and treatment procedures modifying the natural history of HF have changed. For example, numerous patients in Poland underwent an implantable cardioverter-defibrillator implantation and/or were treated with resynchronization therapy. New effective pharmacotherapies have been implemented, leading to a slight reduction of mortality, at the same time limiting the HF incidence. Therefore, the contemporary prevalence of HF in the population is an effect of opposing trends of decreasing incidence and prolongation of life span in HF.

The study by Puch-Walczak et al<sup>5</sup> is the first attempt to look into the prevalence of HF in Poland using a representative sample of the general population. The effort should be greatly appreciated and the authors should receive congratulations on their good work. However, one need to remember that these data, although valuable from a scientific point of view, cannot substitute those obtainable from a long-lasting, representative, prospective and contemporary registry from both inpatient and hospital facilities. Only such data may serve to build a system optimally addressing real-life problems in diagnosis and treatment of HF.

In summary, the study by Puch-Walczak et al<sup>5</sup> adds an important piece of knowledge on the HF epidemiology in the early 1990s in Poland but it cannot completely disperse the dense fog still hanging over the HF epidemiology in the country. The work should be treated as a good incentive to follow the fantastic initiative of the Acute

## ARTICLE INFORMATION

**DISCLAIMER** The opinions expressed by the author(s) are not necessarily those of the journal editors, Polish Society of Internal Medicine, or publisher.

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