On-target antihypertensive treatment in Italy: The ISPIT (Indagine Sica Paziente Iperteso a Target) survey study

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Hypertension represents the most important risk factor for incident cardiovascular events [1], and as such it represents a major problem for the National Health Care systems. However, 30–40% of hypertensive patients lack an adequate blood pressure (BP) control, as defined by BP values <140/90 mm Hg [1], in spite of therapy. Notwithstanding optimal BP control represents the goal of treatment independently on drugs administered, the results of recent RCT gave indications for using specific classes of drugs in specific patients’ population [1] and this should be considered. In addition, other factors which have been poorly investigated systematically might be implicated in the lack of adequate BP control, such as the presence of risk factors, the frequency and modalities of BP measurements, life style etc. The present survey was conceived to provide an overall picture on the extent to which BP is at target in the Italian population of hypertensive patients, and to ascertain what are the conditions linked to the lack (or achievement) of BP control.

29 cardiology units located in different Italian areas belonging to SICOA Association (Società Italiana Cardiologia Ospedalità Accreditata) only participated to the study that included consecutive patients referred in a 3-month period. All information were collected at the time of enrollment using a questionnaire. Target BP was defined as BP <140/90 mm Hg, as measured by sphygmomanometry at the time of enrollment [1]. Patients were considered physically active if they referred to perform regular aerobic physical activity for at least 30 min at least 3 days per week. Age was summarized in three classes (18–65; 66–75; ≥76), and drugs assumption in three categories (1, 2 and 3 or more drugs). Group comparisons were performed using univariate non-parametric statistics. The association between failure in achieving BP control and potential explanatory variables was modelled by means of unconditional logistic regression. All estimates were adjusted for confounders, e.g., age, gender, etc. [2]. A P value of <0.05 was considered significant. The authors complied with the Principles of Ethical Publishing in the International Journal of Cardiology.

The population consisted in 1539 patients, 45% females and 55% males. No significant difference in BP between center–south and north Italy was found. The percentage of patients achieving target BP was 60% independently on geographic distribution and age class. SBP and DBP values were 127.5 ± 11.7/76.7 ± 7.4 mm Hg in patients at target vs 152.4 ± 16.8/87.1 ± 9.7 mm Hg in patients not at target, respectively. 75% of patients featured at least one risk factor, and 36% two or more risk factors. The most common was the lack of physical activity (70%), Diabetes and dyslipidemia were present in 48% and 24% of patients, respectively. 17% of patients were smokers. Table 1 summarizes significant associations from logistic regression analysis. Among all variables investigated, diabetes and overweight were the only predictors of the lack of BP control. Odds ratio (OR) for BP not at target was 1.44 (IC 1.13–1.82, P = 0.003) in patients with diabetes and 1.40 (IC 1.08–1.82, P = 0.001) and 1.80 (IC 1.32–2.39, P = 0.001) in overweight and obese patients, respectively. The lack of physical activity showed a strong trend for BP not at target, (OR 0.81, IC 0.64–1.02, P = 0.06).

Table 1

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Patients achieving BP target</th>
<th>Patients not achieving BP target</th>
<th>Odds ratio (95% confidence interval)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comorbidity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None/other</td>
<td>734</td>
<td>434</td>
<td>1.00</td>
<td>0.015</td>
</tr>
<tr>
<td>Diabetes</td>
<td>196</td>
<td>171</td>
<td>1.35 (1.06–1.72)</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤25</td>
<td>310</td>
<td>156</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>&gt;25–29</td>
<td>431</td>
<td>277</td>
<td>1.40 (1.08–1.82)</td>
<td>0.01</td>
</tr>
<tr>
<td>≥30</td>
<td>189</td>
<td>172</td>
<td>1.80 (1.32–2.39)</td>
<td>0.001</td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>694</td>
<td>415</td>
<td>1.00</td>
<td>0.04</td>
</tr>
<tr>
<td>Others Calcium</td>
<td>236</td>
<td>190</td>
<td>1.29 (1.02–1.61)</td>
<td></td>
</tr>
<tr>
<td>Antagonist</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An unconditional logistic regression model was applied to ISPIT dataset, all models were adjusted by age, gender, center, and actual confounders (n. 1535; Log likelihood —1013.01; LR χ² 32.62 P < 0.001; Pseudo-R² 0.0158).
for diabetes and overweight is the main independent determinants of the lack of achieving target BP [1]. There are, however, some novel data emerging from the present survey that are worthwhile of comments. In particular, there were three factors associated to a clear benefit in achieving BP control that can efficiently be implemented in therapeutic long-term programs, i.e., physical activity, weight control and BP self-measurements.

There is an overall consensus on the effectiveness of regular physical activity in the treatment of hypertension [4,5] and it is now definitely indicated in the therapeutic strategy of hypertension [6]. It has been shown that exercise training is capable of reducing BP in approximately 75% of hypertensives of both genders [4], with a mean reduction of 6.9 and 4.9 mm Hg for systolic and diastolic BP, respectively [7]. In practical terms, this would mean a regression from a “high” to a “normal” blood pressure state for a large part of hypertensive subjects, the majority of which fall into the category of mild hypertension. Hence, general practitioners should strongly act to convince their patients to start and maintain a life-long physical activity program, associated to a diet with a lower caloric content, with periodical verification of adherence and reinforcing.

The ISPIT survey also showed as BP self-measurement was associated to a significantly greater probability to be on target. The most likely explanation for this finding would be that home availability of self-measurement devices allows more frequent BP measurements with a consequent more tailored therapy by physicians. Indeed, self-monitoring home BP is currently recommended for long-term follow-up of hypertension and its management [8,9]. Since these devices are commercially-available at low-cost, their use should be strongly advised by physicians, with periodical validation for their accuracy. Finally, this survey confirms that the class of drugs does not affect BP targeting.

The study, by its observational nature, has some inherent limitations. An example is the lack of information about factors affecting the efficacy of treatment, i.e., the failure to take medications according to the prescribed regimen (non-adherence), and the discontinuation of treatment (non-persistence).

**SICOA (Società Italiana Cardiologia Ospedalità Accreditata)**


**References**


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**Fig. 1.** Distribution of patients (n = 1185) according to the modality of blood pressure measurement (upper panel) and the frequency of blood pressure measurements (bottom panel).
Anxiety and depression scales of patients with congenital heart disease: Caution on 40 healthy controls as the reference population

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To the Editor:

Müller and colleagues reported the levels of situational and trait anxiety in patients with congenital heart disease (CHD) and in 40 healthy controls (24 females and 16 males) [1]. The authors also reported that the minor symptoms of depression in patients with CHD had a stronger effect on their quality of life than limited exercise capacity by targeting sub-population of reference 1 [2].

I have a strong concern on the characteristics of healthy controls in their study. Unfortunately, both reports presented no information on this point. Sex ratios in patients with CHD and healthy controls were different, and selecting procedure of healthy controls was not presented. As the characteristics of healthy controls have an important meaning on the study outcome in their study, precise specification should be presented.

Second, although I agree that age and sex are important adjusting variables on their study, not only anxiety/depression states, but also other factors including marital status, socio-economic status, and clinical severity of CHD should also be compiled for their analysis. As their main statistical procedure lacked multivariate analysis, adjusting procedure seems not satisfactory.

Third, if they concern the diagnostic difference on trait anxiety score in their Table 1 [1], more stratified analysis is required. They did not discuss on this point and concluded as another main study outcome that two types of anxiety score and depression score were strongly correlated with the perceived health status judged by nine sub-scores of the “36-item short form” questionnaire. Do the authors have confidence to handle patients with CHD as a monotonous group? By summing up patients with CHD, stratified analysis targeting specific diagnosis such as cyanotic disease would lead to the adequate explanation on their result [3]. I also have an interest on sex difference on their study outcome, and statistical adjustment by using wide range of age should be handled with caution. More patients with CHD are needed for stable estimates on males and females, independently.

Anyway, to avoid selection bias of epidemiological study, the precise descriptions of controls are indispensable and are a fundamental procedure for scientific evaluation.

I wish to express my appreciation to the members of the Hygiene and Public Health, Nippon Medical School, for the preparation of this study. The author of this manuscript has certified that he complies with the Principles of Ethical Publishing in the International Journal of Cardiology.

References


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