

Risk for chronic kidney disease in the general population

Italian reports for World Kidney Days 2007-2009

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The prevalence of chronic kidney disease (CKD) has rapidly increased in recent decades in many countries, leading to consistent economic implications. Considering the fact that patients surviving to CKD often develop end-stage renal disease, the number of patients requiring replacement therapy reached 169/million population (pmp) in Italy in 2004 and 342 pmp in the United States. Furthermore, CKD weighs on patients survival with a considerably increased cardiovascular (CV) morbidity and mortality. For these reasons, CKD has been defined as a “common and harmful” condition.

There is consistent evidence that progression of CKD can be reduced by controlling hypertension (HT) and using kidney-protective drugs (e.g., angiotensin-converting enzyme inhibitors [ACE-I], angiotensin II receptor blockers [ARBs] and renin inhibitors). Better results are achieved when prevention strategies are initiated very early. Thus, detection of patients at risk in the general population is becoming even more important. This relies on awareness in the population that kidney disease is frequently symptomless.

Screening programs have been advocated also for CKD, to

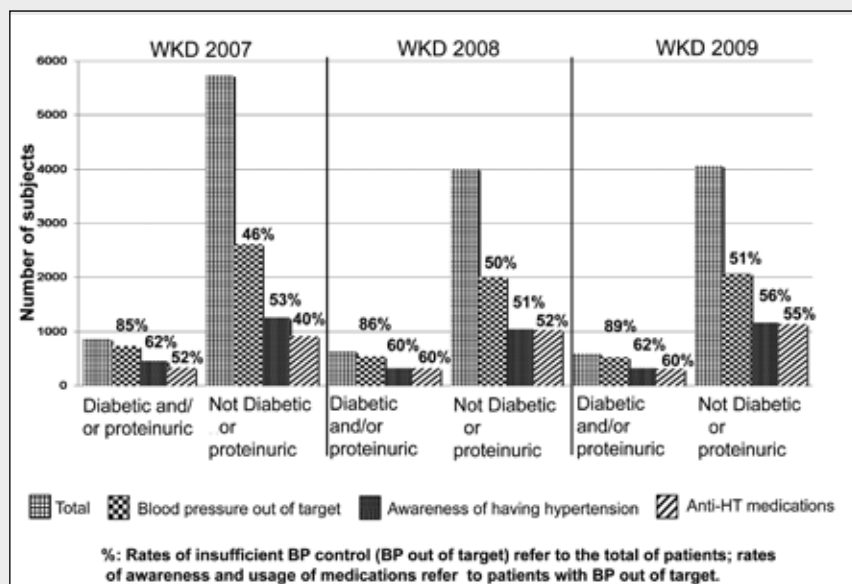


Fig. 1 - Number of subjects with hypertension (HT), awareness of hypertension and usage of antihypertensive medications, according to the presence of diabetes and/or proteinuria. BP = blood pressure; WKD = World Kidney Day.

anticipate the diagnosis in a preclinical phase with consequent benefits on the outcome. Despite the ongoing debate on the effective need for CKD screening and about which population groups could benefit from it, prevention and informative programs such as those proposed by the International Federation of Kidney Foundations (IFKF) continue to have particular importance in raising public awareness about CKD. Countries which are members of the IFKF have actively developed different prevention programs, and activities during World Kidney Day (WKD) have contributed significantly toward this aim.

The present investigation was planned and conducted by the Fondazione Italiana del Rene (FIR; National Kidney Foundation of Italy) on the occasion of WKD in 2007, 2008 and 2009, with 3 major goals: (i) to inform the general population about HT and proteinuria, in a nontraditional medical setting – in the main squares of participating cities, (ii) to give a basic estimate of awareness and management of HT in the recruited population and (iii) to measure blood pressure (BP) and to complete urine tests in these subjects.

Mobile clinics, or gazebos, with an examination room and restrooms for urine collection were parked in a central square of the participant cities throughout the day on the occasion of WKD in 2007, 2008 and 2009, with the numbers of participating cities being 53, 32 and 35, respectively.

People walking in the square had free access to the clinic for measurement of BP and evaluation of urine by dipstick. Enrolled subjects verbally answered a questionnaire. They were considered proteinuric when the urine dipstick was positive for a proteinuria ≥ 30 mg/dL, and hypertensive according to the following criteria: diabetic and proteinuric pa-

tients if their BP was $\geq 130/80$ mm Hg, those without diabetes mellitus or proteinuria if their BP was $\geq 140/90$ mm Hg. All individuals taking antihypertensive drugs were considered hypertensive.

During WKD in 2007, 2008 and 2009, as many as 6,598, 4,455 and 4,534 individuals were enrolled, respectively. Prevalence of hypertension was 57%-58% and was consistent throughout the 3 surveys. Hypertension was descriptively associated with older age, male sex, diabetes, proteinuria, body mass index, hypercholesterolemia and past smoking history. Individuals affected by diabetes and/or proteinuria were 13%-14% of the enrolled population.

One quarter of the enrolled subjects were unaware of being hypertensive, apparently receiving their first diagnosis of HT on the occasion of WKD (Tab. I). Awareness of HT swayed from 53% to 57% between WKD 2007 and WKD 2009, and was considerably greater (85%-93%) in those taking antihypertensive medications, and even higher in treated individuals with BP values out of target. Among diabetic and/or proteinuric patients, awareness of HT was slightly higher (60%-62%) compared with the rest of the study population (51%-56%) (Fig. 1).

From 2007 to 2009, the prevalence of HT individuals who referred to being treated with antihypertensive medications increased from 41% to 56%. A slight increase in the quality of BP control was equally observed, going from 28% in 2007 to 33% in 2009. The better achievement of BP targets was associated with younger age, female sex, absence of diabetes and better body mass index. Achievement of BP control was extremely low in diabetic and/or proteinuric patients: 85%-89% of these subjects had BP values greater

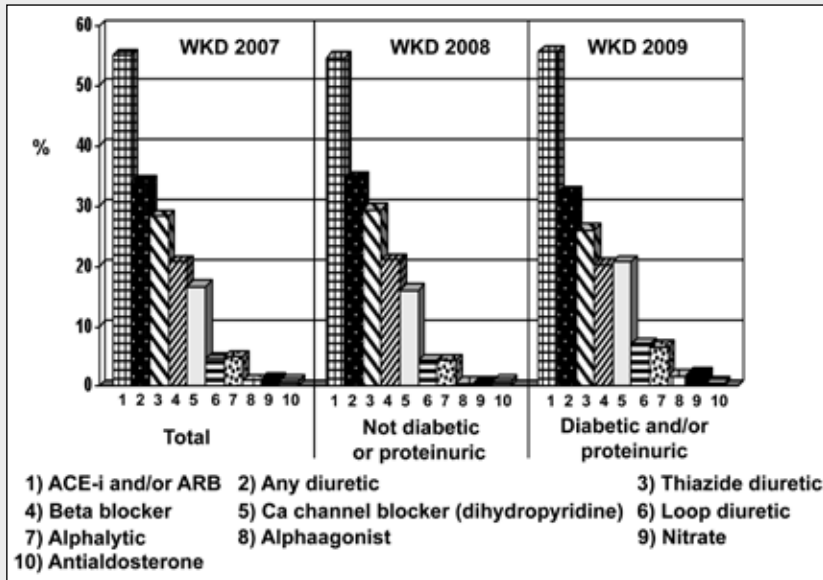


Fig. 2 - Distribution of antihypertensive medications. ACE-i = angiotensin-converting enzyme inhibitor; ARB = angiotensin II receptor blocker; WKD = World Kidney Day.

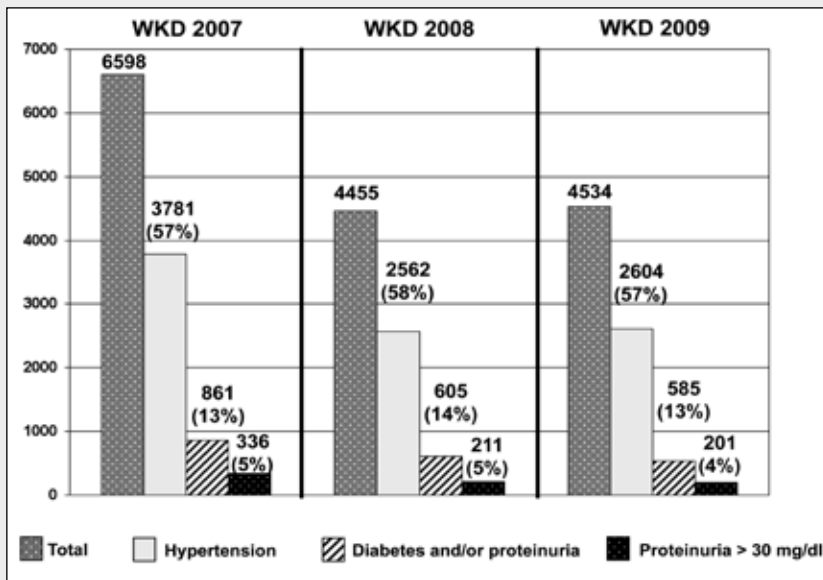


Fig. 3 - Individuals at risk for chronic kidney disease (CKD).

than 130/80 mm Hg (Fig. 1). In the rest of the population, BP control was only slightly better, with approximately 50% of individuals with BP values out of the target range (Fig. 1). Achievement of BP control was independent of the number of antihypertensive medications.

The distribution of different classes of medications is reported in Fig. 2. The most widely represented classes were ACE-Is and/or ARBs, followed by diuretics, beta blockers and calcium channel blockers. The classes of antihypertensive medications were distributed independently of the presence of diabetes and proteinuria (Fig. 2). At least 40% of hypertensive diabetic or proteinuric individuals were not taking any antihypertensive treatment (Fig. 1), and, although ACE-Is and ARBs were the most widely represented phar-

maceutical classes, 30% of diabetic or proteinuric individuals did not receive them in 2007.

Proteinuria is an early marker of renal damage and a major risk factor for CKD progression. It has been suggested that high-risk subjects, such as patients with diabetes mellitus and/or HT, should be tested for albuminuria. Approximately 5% of the individuals enrolled during the Italian WKDs tested positive for proteinuria, and 72%-87% of them referred to not being informed about proteinuria (Tab. I, Fig. 3).

The results of this study are consistent with the data already reported in previous papers (Russo D, Napolitano P, Sirico ML, Andreucci VE. A project to prevent renal diseases in the general population. *J Nephrol.* 2007;20:36-42; and Galassi A, Brancaccio D, Cozzolino M, et al.

TABLE I
HYPERTENSION AND PROTEINURIA AS SURVEYED ON WKD 2007-2009

	WKD 2007	WKD 2008	WKD 2009
Total subjects	6,598	4,455	4,534
Hypertensive subjects*	3,781 (57%)	2,562 (58%)	2,604 (57%)
New hypertensive subjects* [†]	1,681 (25%)	1,207 (27%)	1,109 (24%)
Proteinuria ≥ 30 mg/dL, no. of subjects*	336 (5%)	211 (5%)	200 (4%)
New proteinuric subjects [‡]	242 (72%)	178 (84%)	173 (87%)

WKD = World Kidney Day.

*Percentages refer to the total number of subjects.

[†]New hypertensive subjects: individuals unaware of being hypertensive.

[‡]Percentages refer to all subjects found to be proteinuric.

Awareness of hypertension and proteinuria in randomly selected patients in 11 Italian cities: a 2005 report of the National Kidney Foundation of Italy. *J Clin Hypertens.* 2009;11:138-143).

In conclusion, awareness concerning HT and the quality of BP control among Italians who were voluntarily screened during World Kidney Day 2007-2009 are still suboptimal. Preventive and informative programs, such as those proposed by the FIR Onlus in the context of IFKF, may allow the identification of a considerable number of individuals at risk, in the meanwhile increasing their awareness about CKD and its prevention.

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