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### Background and Aim

Hepatitis C virus (HCV) infection is a major health problem with 150-170 million people chronically infected worldwide. The distribution of HCV genotypes shows a great heterogeneity, reflecting the differences in epidemiology, including modes of transmission and ethnic variability in different countries. In Italy HCV infection has a typical epidemiological profile in that the majority of infected patients are older than 60 years of age. It has been reported that the most prevalent genotype is 1b, followed by genotype 2c.

HCV genotypes are associated with treatment response and may play an important role in disease progression. Genotype 3 is considered the most difficult to treat genotype while genotype 2 has been classified as "easy-to-treat".

In this analysis we examined the age distribution of the 3 major HCV genotypes in Italy (1a&b, 2 and 3) to investigate differences in age and comorbidities distribution.

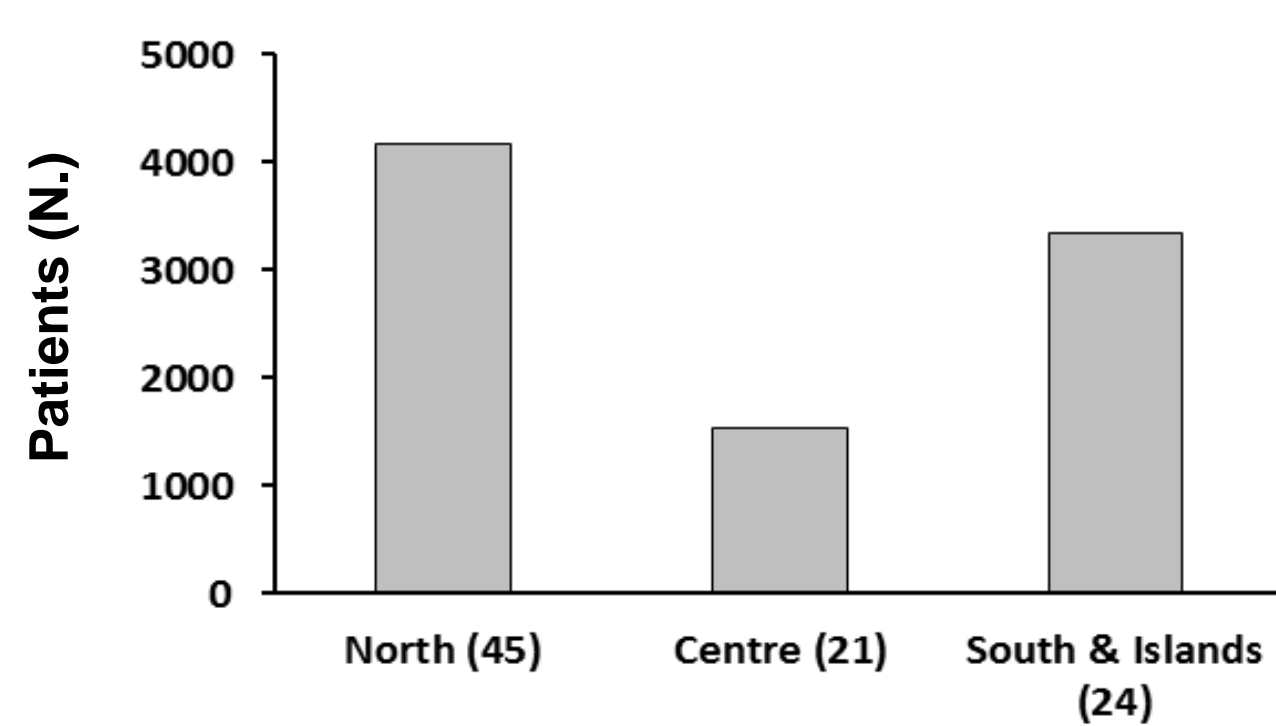
The analysis was conducted within the Italian Platform for the study of viral hepatitis therapies (PITER), a multicentric cohort study, developed as a collaboration among the Istituto Superiore di Sanità, the Italian Society for the Study of the Liver (AISF) and the Italian Society for Infectious Diseases (SIMIT).

### Patients and Methods

Patients were consecutively enrolled in PITER between Apr 2014 and May 2016 from 90 Clinical Centers distributed all over the country. All patients were free of anti-HCV therapy at the enrollment time. The enrolled patients will followed-up for at least 5 years, independently if they will be undergone an anti-HCV-antiviral therapy. The web-based platform contains detailed virological, clinical and therapeutic data of the enrolled patients.

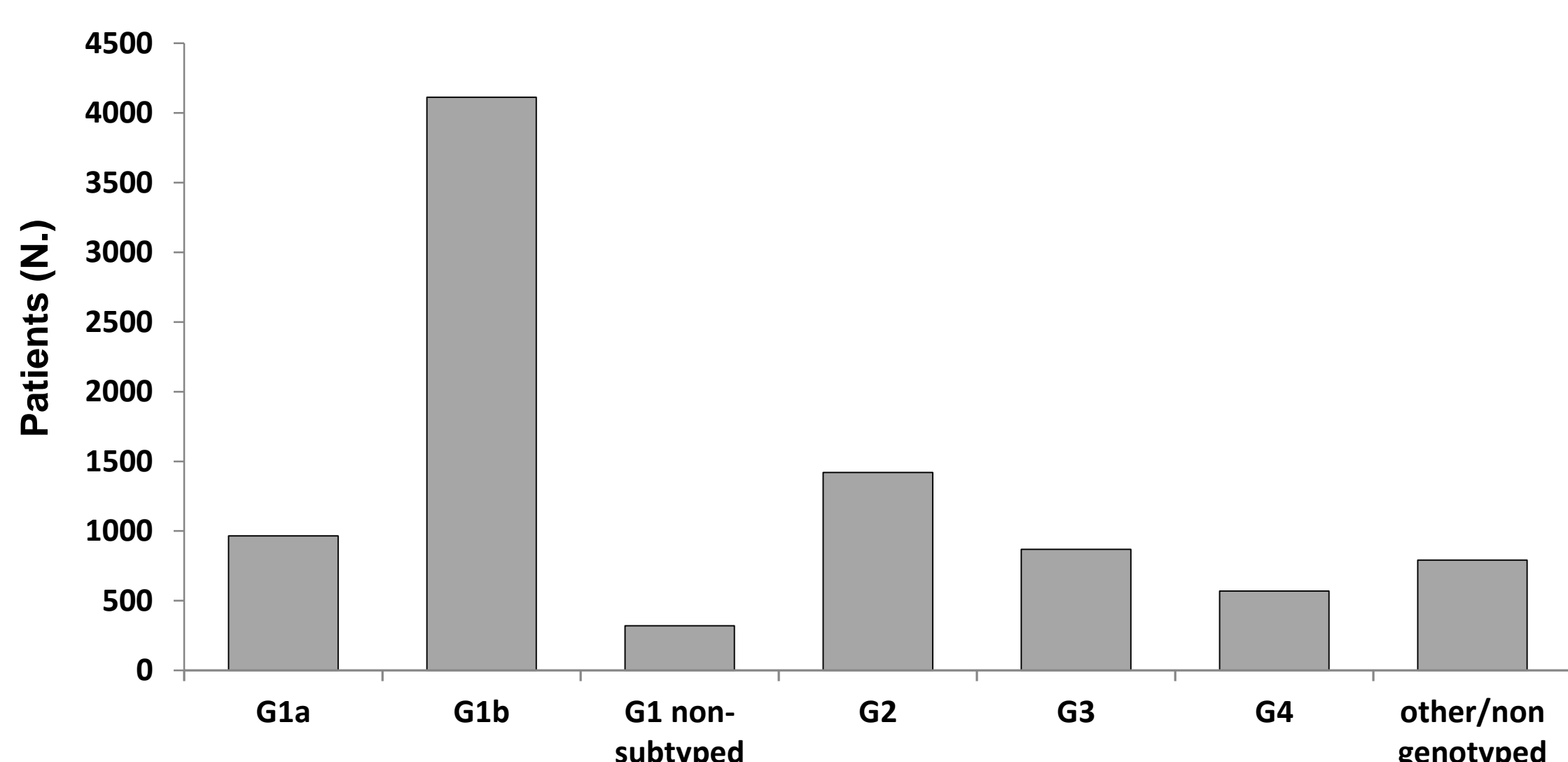
The majority of patients were Italian (95%). Mean age of the enrolled patients was 60.54 years (SD 12.6 years), at the time of enrollment into PITER Cohort Study and 55.3% of them were men.

**Distribution of patients enrolled until May 2016 according to geographical area of the enrolling Centers**



### Results

**Genotype distribution of patients enrolled until May 2016**



### Prevalence of HCV genotypes 1, 2 and 3 according to age groups

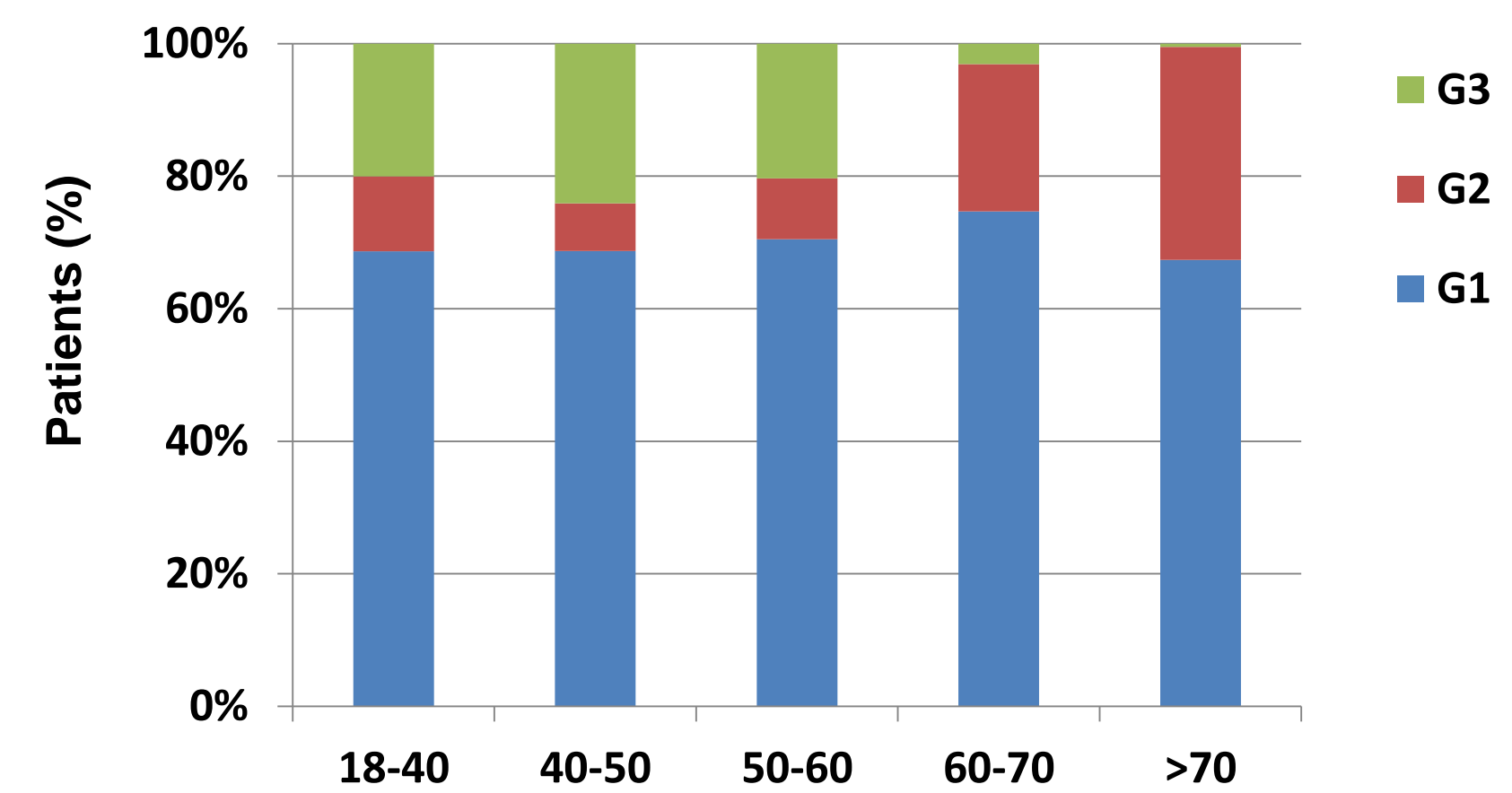
For the analysis of prevalence of the three major genotypes by age, we extracted all patients with HCV genotypes 1, 2 and 3. This analysis was restricted to data extracted by the database updated December 2015.

Patients were stratified by age classes (18-40; 40-50; 50-60; 60-70; >70).

In all, 6250 consecutively enrolled patients were retrieved, i.e. 4406 Gt1, 1122 Gt2 and 722 Gt3. Overall, 27.6% of the patients were in the age class 60-70 and 23.4% were over 70.

Looking at each genotype, patients over 60 were 51.5% in Gt1, 75.9% in Gt2 and 7.4% in Gt3; patients over 70 were 22.3%, 41.8% and 0.1%, respectively in Gt1,2 and 3 (p<0.001).

Age (years)	G1 N=4406	G2 N=1122	G3 N=722	Total N=6250
18-40	254 (5.8)	42 (3.7)	74 (10.3)	370 (5.9)
40-50	687 (15.6)	72 (6.4)	241 (33.4)	1000 (16.0)
50-60	1194 (27.1)	157 (14.0)	346 (47.9)	1697 (27.1)
60-70	1288 (29.2)	382 (34.1)	53 (7.3)	1723 (27.6)
>70	983 (22.3)	469 (41.8)	8 (0.1)	1460 (23.4)



### Prevalence of specific comorbidities according to genotypes and age groups

During HCV chronic infection, extrahepatic manifestations are frequent and polymorphous. We analyzed the presence of comorbidities according to genotype distribution and age groups. Cardiovascular disease and diabetes were the main extrahepatic manifestations in all age groups for patients infected with all genotypes.

In younger age (<65) cardiovascular diseases are more frequent in patients infected with Gt1 and Gt2, while in older patients (>65) are more frequent in G3 infected patients.

At least one comorbidity was present in 67.9% of patients infected with Gt1, 76.3% in patients infected with Gt2 and 52.9% in those infected with Gt3.

	Age <65			Age >65		
	G1	G2	G3	G1	G2	G3
Cardiovascular	21.6	22.5	14.4	49.4	51.2	63.6
Diabetes	10.2	10.0	8.7	19.7	16.7	18.3
Osteoarticular	4.2	2.9	4.0	9.7	8.8	9.1
Tireopathy	7.4	7.1	5.4	12.2	9.3	9.1
Cancer	4.4	5.4	4.3	7.8	10.8	13.6

### Conclusion

Genotype 2 is prevalent in older patients, possibly due to its earlier introduction in Italy. Although it is considered an "easy to treat" genotype, most patients have one or more comorbidities as a consequence of the older age, which may make problematic antiviral therapy because of adverse effects – particularly from ribavirin – and interactions with drugs used to treat concomitant diseases.