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Prevalence of *Trypanosoma cruzi* infection in Latin American pregnant women and level of compliance of the Valencian Health Programme in the city of Alicante

To the Editor

In the October 2012 issue of *Epidemiology and Infection*, Barona-Vilar *et al.* reported on the level of implementation of the protocol for early diagnosis of Chagas disease in pregnant Latin American women ('Valencian Health Programme in Latin American Immigrant Women') in the city of Valencia (Valencian Community, Spain) during 2009 and 2010 [1]. In 2007, the public health authorities in the Valencian Community decided to design and perform a strategy for dealing with the early diagnosis of Chagas disease in pregnant women from endemic countries [2, 3]. We conducted a similar analysis of the level of compliance with the recommendations of the Valencian Health Programme in Latin American immigrant women living in the city of Alicante (Valencian Community, Spain). We performed a retrospective analysis from January 2008 to August 2012, crossing our records database of deliveries in Latin American women in the Department of Obstetrics in the hospital, with the database of *Trypanosoma cruzi* serology performed during the same period in the Section of Microbiology. The detection of antibodies was performed by one serological test (SD Chagas Ab Rapid, SD Standard Diagnostics Inc., Korea).

A total of 1132 pregnant women from Central and South America (excluding the Caribbean countries) were studied. The median age was 29·7 years (s.d. = 6·3). The serological test against *T. cruzi* during pregnancy was performed in 466 women [compliance rate of the programme: 41·2%, 95% confidence

interval (CI) 38·3–44·1]. During the first period, from January to August 2008, the serological test was performed in 27·1% of pregnant women, after that the compliance rate of the programme was increased (Fig 1). The compliance rate was significantly higher in women from Bolivia (59·8%), and Ecuador (47·8%) than in women from Argentina (27·5%) (Table 1).

The overall seroprevalence of *T. cruzi* was 3·0% (14/466, 95% CI 1·7–5·1). All *T. cruzi*-infected women were from countries of the Gran Chaco Region (Bolivia: 18·8%, 95% CI 10·3–31·8; Paraguay: 5·4%, 95% CI 0·9–19·5; Argentina: 2·9%, 95% CI 0·1–13). If we considered the prevalence in women who had the serology performed, 20 Latin American pregnant women were not diagnosed (Table 1). The genome of *T. cruzi* amplified by PCR was performed in 11 women, and we received a positive result for eight (72·7%). The follow-up of newborns was available in 10 infants. They all had *T. cruzi* antibodies, but the genome amplification by PCR was negative for all of them.

Barona-Vilar *et al.* revealed that the compliance rate of the Valencian Health Programme in Latin American immigrant women was 95·4% [1]. Our findings reveal that the prenatal care programme conducted by midwives was not as good as in the study by Barona-Vilar *et al.* There are two differences in the same programme: first, in the city of Valencia, in the case of control women, these serological tests were performed at the time of delivery in the hospital; in our study this was not done. Furthermore, in their study, the authors did not describe the percentage of serologies performed during delivery. Second, in the city of Valencia there were workshops for the midwives who motivated the women to allow *T. cruzi* serology; in our study we did not have these workshops. In another study performed in another city in the Valencian Community, Elche, the compliance rate of

Table 1. Compliance rate of the recommendations of the Valencian Health Programme (VHP) in Latin American immigrant women and overall *Trypanosoma cruzi* seroprevalence by country and theoretical number of *T. cruzi*-infected pregnant women non-diagnosis.

	Pregnant women delivered		Pregnant women with serological test		OR (95% CI) of compliance rate of VHP‡	No. positive	<i>T. cruzi</i> seroprevalence	OR (95% CI) of seroprevalence	Theoretical pregnant women non-diagnosed§	
	N	%*	N	%†					N	Range
Ecuador	312	27.6	149	47.8	1.45 (1.12–1.89)	0	0.0	(0–3.1)	0	(0–5)
Colombia	264	23.3	112	42.4	1.07 (0.81–1.41)	0	0.0	(0–4.1)	0	(0–6)
Argentina	167	14.8	46	27.5	0.50 (0.37–0.77)	1	2.2	(0.1–13)	4	(0–16)
Bolivia	97	8.6	57	58.8	2.30 (1.51–3.49)	11	18.8	(10.3–31.8)	8	(4–12)
Paraguay	82	7.2	37	45.1	1.19 (0.76–1.73)	2	5.4	(0.9–19.5)	3	(0–9)
Venezuela	51	4.5	14	27.5	0.51 (0.27–0.95)	0	0.0	(0–26.8)	0	(0–10)
Brazil	39	3.4	12	30.8	0.59 (0.31–1.19)	0	0.0	(0–30.1)	0	(0–8)
Uruguay	39	3.4	10	25.6	0.46 (0.22–0.96)	0	0.0	(0–34.5)	0	(0–10)
Peru	38	3.3	15	39.5	0.87 (0.45–1.69)	0	0.0	(0–25.4)	0	(0–6)
Others	43	3.8	13	30.2	—	0	0.0	(0–28.3)	5	(0–9)
Total	1132	100	465	41.1	—	14	3.0	(1.7–5.1)	20	(11–34)

OR, Odds ratio; CI, confidence interval.

* Percentage of pregnant women delivered.

† Percentage of origin (compliance rate of VHP).

‡ As reference others nationalities.

§ Theoretical pregnant women non diagnosed = number of pregnant women in who the serological test were not performed × prevalence of positive case.

|| Other countries (total/performed/%): Chile (14/5/35.7); Honduras (11/5/45.5); Mexico (6/2/33.3); Costa Rica (4/0/0); El Salvador (3/1/33.3); Guatemala (2/0/0); Surinam (2/0/0); Nicaragua (1/0/0).

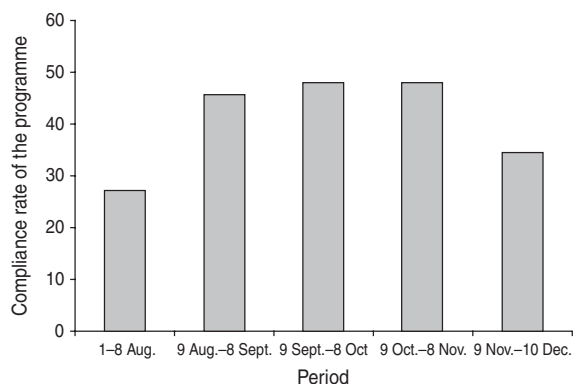


Fig. 1. Compliance rate of the recommendations of the Valencian Health Programme in Latin American immigrant women from January 2008 to September 2012.

the Valencian Health Programme was 40%, but in this case they also performed the test at the time of delivery [4]. In the city of Alicante we need to implement some of the strategies of Barona-Vilar *et al.*, specifically the midwives' workshop and serology performed at the time of delivery. In Catalonia in the Screening Programme of Chagas Disease in Newborns of Latin American origin, the rate of coverage in 2010 was 77.7% [5]. Our study was similar to others performed in Spain where the higher prevalence of *T. cruzi* infection (over 80%) was found in pregnant Bolivian women [1, 4, 5, 6].

In conclusion, we recommend implementation of screening in other areas of Spain. Moreover, it is important to perform screening on pregnant woman in other European countries where there is Latin American immigration especially from Bolivia. Possibly, the Valencian and Catalanian programmes should be mirrored in any country with Latin American immigrants.

Declaration of Interest

None.

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Prevalence of *Trypanosoma cruzi* infection in Latin American pregnant women and level of compliance of the Valencian Health Programme in the city of Alicante: a reply

The study of Ramos *et al.* [1] above, describes the coverage of Chagas disease screening in pregnant women from endemic countries living in Alicante. Their results were compared to our study showing results