Correspondence

COVID-19 testing in Peru: low access and inequalities

The article published by Mendoza *et al*.[1] reaffirms the need to conduct mass testing to detect the new variants of SARS-CoV-2, and requests that the population remain cautious even after testing negative for infection. In this article, we emphasize the need to guarantee access to mass testing among symptomatic patients considering the presence of vulnerable populations particularly in low- and middle-income countries.

With an excess of 355 deaths per 100 000 people between March 2020 and March 2021, Peru is one of the countries most affected by the coronavirus disease 2019 (COVID-19) pandemic.[2] Due to the increasing number of cases in 2021, country level diagnostic capabilities serve two main objectives: early identification and treatment of cases, and achieving accurate reporting of the number of deaths due to COVID-19. In contrast, Uruguay, one of the countries with the lowest contagion and mortality rates and highest rates of mass testing in the region, has demonstrated the strength of an aggressive screening strategy which disregards the presence of symptoms.[3]

Peru is a country with notable inequalities regarding healthcare, these are concentrated in isolated geographic zones, and among vulnerable groups.[4] To date, the influence of these characteristics on the realization of COVID-19 diagnostic tests has not been evaluated. Considering this, we aimed to evaluate the factors associated with performing diagnostic tests in a representative sample of Peruvians with symptoms compatible with COVID-19 during the 4 weeks prior to the interview using information of the third trimester of the 2020 National Household Survey (ENAHO, acronym in Spanish) carried out by the National Institute of Statistics and Informatics. We conducted a descriptive analysis of the characteristics of 27 772 residents of Peruvian households and reported the prevalence ratios (PR) as measures of association with their 95% confidence intervals (CI).

Overall, 1142 (4.0%) participants reported having had some symptom of COVID-19 during the 4 weeks prior to the survey. Of these, 50.6% had undergone some COVID-19 test. In the adjusted model, age was positively associated with a higher performance of a COVID-19 test (PR: 1.01; 95%CI 1.00–1.01), while living in the Amazon in comparison to living in Metropolitan Lima (PR: 0.66; 95%CI 0.48–0.91) and having some form of functional limitation (PR: 0.56; 95%CI 0.32–0.99) were negatively associated with undergoing a diagnostic test (Table 1). A total of 68.7% tested positive for COVID-19.

Only half of Peruvians with COVID-19 symptoms during the last 4 weeks had undergone diagnostic tests. Those living in the Amazon or with functional limitations had lower access to a diagnostic test. This outcome may be influenced by limitations intrinsic to the health system and socioeconomic inequalities among the population such as scarcity of diagnostic tests, lack of infrastructure and trained staff throughout the country, lack of access to social programs, an increase of poverty after a prolonged period of compulsory nationwide quarantine and the informality of the workforce, which entails more out-of-pocket spending to obtain healthcare.[5]

It is necessary for governments to ensure access to mass diagnostic testing for COVID-19 guaranteeing equitable deployment throughout the nation, taking into account the vulnerability of certain sectors.

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Table 1 Background characteristics of the respondents and factors associated with performing a COVID-19 diagnostic test

Characteristics	*Total (n = 1142)*		*Crude model*		*Adjusted model**	
	n	*% (95% CI)*	*PR (95% CI)*	*P-value*	*aPR (95% CI)*	*P-value*
Sample size	1142	100				
Age, mean (SD)	36.9 (17.8)		1.01 (1.00–1.01)	0.003	1.01 (1.00–1.01)	0.021
Sex						
Men	547	51.9 (55.2–54.7)	Reference		Reference	
Women	595	48.1 (44.9–51.4)	0.91 (0.80–1.03)	0.151	0.90 (0.79–1.02)	0.104
Regions						
Metropolitan Lima	143	34.9 (28.7–41.7)	Reference		Reference	
Coast	353	23.8 (19.2–29.0)	1.12 (0.85–1.47)	0.417	1.12 (0.85–1.48)	0.407
Andean	212	19.1 (14.6–24.4)	1.01 (0.75–1.36)	0.930	1.04 (0.77–1.40)	0.813
Amazon	434	22.2 (17.7–27.5)	0.62 (0.15–0.84)	0.002	0.66 (0.48–0.91)	0.010
Area						
Urban	928	91.3 (89.1–93.1)	Reference		Reference	
Rural	214	8.7 (6.9–10.9)	0.79 (0.59–1.05)	0.108	0.90 (0.67–1.22)	0.493
Overcrowding						
No	1062	94.6 (90.6–96.9)	Reference		Reference	
Yes	80	5.4 (3.1–9.4)	0.65 (0.44–0.95)	0.027	0.85 (0.60–1.21)	0.368
Health insurance						
No	236	22.6 (18.8–26.9)	Reference		Not included	
Yes	906	77.4 (73.1–81.2)	1.05 (0.83–1.32)	0.689		
Functional limitation						
No	1100	95.9 (93.9–97.3)	Reference		Reference	
Yes	42	4.1 (2.7–6.1)	0.69 (0.40–1.19)	0.187	0.56 (0.32–0.99)	0.047
Chronic diseases						
No	597	50.1 (45.7–54.4)	Reference		Reference	
Yes	545	49.9 (45.6–54,8)	1.24 (1.05–1.46)	0.013	1.13 (0.95–1.34)	0.154

PR: prevalence ratio (obtained by Poisson regression); aPR: adjusted prevalence ratio; SD: standard deviation; CI: confidence interval.

Estimates included the expansion factor and National Household Survey (ENAHO) sample specifications.

A *P*-value <0.05 is statistically significant.

The technical report of the third quarter of 2020 ENAHO is available at: http://m.inei.gob.pe/media/MenuRecursivo/boletines/informe-condiciones-de-vida.pdf.

The databases used in this study are freely accessible and can be downloaded from the website of the Instituto Nacional de Estadística e Informática. (http://iinei.inei.gob.pe/microdatos/).

*Adjusted model for all the variables that resulted in a *P*-value <0.2 in the crude model.

Disclosure of Interest

The authors declare no competing conflict interests.

Contribution to Authorship

A.H.V. conceived the study. All authors drafted the manuscript, and critically reviewed and approved the final manuscript. All authors assume responsibility for the content of the manuscript.

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