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Letter to the Editor

Author Reply

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We wish to thank the commentators for their time and effort in providing valuable feedback to our study. The main purpose of our study was to evaluate the willingness to pay (WTP) for a coronavirus vaccine and its associated determinants in Lebanon. WTP for a vaccine is important to understand public acceptance of such a novel vaccine. Given that the refusal of vaccination or delay in acceptance is recognized as a serious public threat,¹ the reasons for hesitation about vaccination and the determinants of WTP are essential for the global vaccination campaign to be effective.

As mentioned by Mungmunpantipantip and Wiwanitkit,² previous studies support our point of view regarding most of the determinant factors, such as the conception of the severity of the disease.³ Moreover, a study conducted in Nigeria showed that religion and age were related to WTP.⁴ In the present study by Karam et al.,⁵ age was not significantly associated with WTP, whereas religion was not considered as a confounding variable.

To assess the respondent's WTP, the contingent valuation method was used. This method is a standard and accepted technique of stated preferences for capturing maximum WTP. Both payment card and open questions were used to reveal WTP. Given that Lebanon is dealing with unstable currency, the WTP presented in our article was assessed based on the maximum value in US dollars. To identify factors associated with this WTP, a bivariate analysis was done. Student's *t* test, analysis of variance, or Pearson's tests were used to test these associations in the case of variables with adequate normal distributions.

We agree with the commentators that WTP might be different according to the setting. In Lebanon, although some vaccines can be available for free at primary healthcare centers, not all the vaccines are free of charge. To note, out-of-pocket payments accounted approximately for 33.1% of total health spending in 2017.⁶ As mentioned in our article, this study was conducted at a very early phase between June and July 2020, in which there was not yet a Food and Drug Administration-approved vaccine. It was not clear whether the vaccine will be covered or not. Thus, we estimated a hypothetical range of prices based on the grid of vaccination fees found on the official site of the Ministry of Public Health (MOPH). We noted that the prices of vaccines ranged between 10\$ and 200\$, according to the disease.⁷ The prices are fixed by the local currency, the Lebanese pound. Considering the official rate of 1\$ = 1507 Lebanese pound, WTP for the hypothetical vaccine was proposed taking as a starting point the lowest price of vaccine available on the website of MOPH and a rounded value of the highest price of vaccine available in Lebanon. As mentioned

earlier, an alternative method was considering the inflation scenario. Till January 2021, the coverage of the vaccine was not defined for all the residents in Lebanon. The MOPH has reserved vaccines for 20% of the population residing in Lebanon through the COVID-19 Vaccines Global access (COVAX) facility and for approximately 15% of the population through an official bilateral agreement with Pfizer.⁸

Concerning the pricing system, it is fixed by MOPH. It is done by the general procedure of fixing the price for a vaccine taking into consideration the cost of importation, the custom standardized fees, and the effectiveness and the quality of the vaccine according to the scientific commissions and financial committee.⁹

Finally, because the main aim of our study was to evaluate the WTP of the vaccine and its determinants, the pricing process has not been discussed. The application of value-based pricing would be a good perspective in Lebanon because of the increase of out-of-pocket payments.

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