



# 'Vaccine hesitancy' among university students in Italy during the COVID-19 pandemic

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## Abstract

The debate around vaccines has been in the spotlight over the last few years in Europe, both within the scientific community and the general public debate. In this regard, the case of the Italian vaccination debate is particularly worrying given that Italy has been one of the European countries with the highest number of measles cases in the recent past. According to this scenario, we conducted a cross-sectional study on a convenience sample of Italian university students aimed at: (1) exploring their attitudes towards a future vaccine to prevent COVID-19 and; (2) evaluating the impact of the university curricula (healthcare vs. non-healthcare curricula) on the intention to vaccinate. Descriptive analysis on the 735 students that answered to the question on the intention to vaccinate showed that 633 (86.1%) students reported that they would choose to have a vaccination for the COVID-19 coronavirus; on the other side, 102 (13.9%) students reported that they would not or be not sure to vaccinate (low intention to vaccinate). This means that in our sample more than one student out of 10 shows low intention to vaccinate (vaccine hesitancy). Furthermore, when running analysis comparing healthcare students versus non-healthcare students we found no significant differences in responses' percentage distribution ( $p = .097$ ). Understanding the student's perspective about the future COVID-19 vaccine and supporting their health engagement and consciousness may be useful in planning adequate response and multidisciplinary educational strategies—including the psychological perspective on vaccine hesitancy underlying factors - in the post-pandemic period.

**Keywords** COVID-19 · Vaccine hesitancy

We read with great interest the essay by Harrison and Wu [1] on vaccine confidence in the time of COVID-19. They wondered if the impact of the COVID-19 global health emergency will solve the problem of vaccine refusal that has worried the global public health community for the last several decades. Indeed, the concept of 'vaccine hesitancy' has been considered by the World Health Organization (WHO) as "one of the top-ten threats to global health" [2]. The debate around vaccines has been in the spotlight over the last few years in Europe, both within the scientific community and the general public discourse. In this regard, the case of

the Italian vaccination debate is particularly worrying given that Italy has been one of the European countries with the highest number of measles cases in the recent past [3]. This issue led to the introduction of laws prescribing mandatory vaccinations for children to attend school in December 2017, which gave rise to an active debate [3]. In line with Harrison and Wu [1], we wonder if the COVID-19 experience will fix the problem of vaccine hesitancy in Italy.

According to this scenario, we conducted a cross-sectional study on a convenience sample of Italian university students aimed at: (1) exploring their attitudes towards a future vaccine to prevent COVID-19 and; (2) evaluating the impact of the university curricula (healthcare vs. non-healthcare curricula) on the intention to vaccinate. University students could be considered as an insightful population to investigate their attitudes to accept new vaccination because they are open-minded, educated, and supposed to respond quickly to public health issues. Our sample was not designed to be representative of the Italian university

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students, but to provide an initial and insightful description of the investigated phenomena.

Of the 1152 contacted, 934 students responded (response rate = 81%) to the online questionnaire sent through the participating universities' mailing lists: 551 students (58.9%) attended healthcare curricula (i.e., medicine, nursing) and 383 students (41.1%) attended non-healthcare curricula (i.e. economics, law, engineering, physics, math, human sciences). Females were the majority (79.6%); mean age was 23.6 years (standard deviation = 4.9). The majority of the respondents who indicated their provenience (n = 664) lived in one of the most hit Italian regions - Lombardy - (n = 397; 59.8%), followed by respondents from Lazio (n = 63; 9.5%).

Descriptive analysis on the 735 students that answered to the question on the intention to vaccinate showed that 633 (86.1%) students reported that they would choose to have a vaccination for the COVID-19 coronavirus; on the other side, 102 (13.9%) students reported that they would not or be not sure to vaccinate (low intention to vaccinate). This means that in our sample more than one student out of 10 shows low intention to vaccinate (vaccine hesitancy), a percentage that reflects the international literature on general influenza vaccine hesitancy [4–7]. All the comparison analysis showed that responders who chose not to disclose their intention to vaccinate did not significantly differ from the others on demographic and social characteristics. Furthermore, when running analysis comparing healthcare students versus non-healthcare students we found no significant differences in responders' percentage distribution ( $p = .097$ ). These results requires particular attention. First, we expected that the intention to vaccinate would have been higher in students attending healthcare curricula due to higher literacy on health-related issues. Second, these findings shed light on the potential risks liked to healthcare students vaccination hesitancy because vaccination of healthcare workers is a key measure in the prevention of healthcare-associated infections due to their close contact with high-risk patients [8].

Although preliminary, this finding suggests that vaccination attitude is not only influenced by the students' level of health knowledge, but probably by other motivational and psychological factors, including the sense of individual responsibility for population health and the common sense about the value of civic life and social solidarity, as demonstrated by other studies on the COVID-19 pandemic and previous emergencies [1, 9]. Not only the general public, but also those studying to become health professionals, seem to struggle to keep up with a growing body of evidence and increasingly complex information and contrasting feelings about vaccines. Therefore, public health information campaign should be also supported by other actions aimed at raising students' consciousness regarding the crucial role of individuals' engagement in safeguarding their own and others' health through vaccination. Students are a good target

for educational campaigns as they are still in their training period and are open to changing their habits. Understanding the student's perspective about the future COVID-19 vaccine and supporting their health engagement and consciousness may be useful in planning adequate response and management strategies in the post-pandemic period [10]. We think that the strategy to achieve efficient synergy between healthcare professionals and the general public is to better improve medical education of students during university and beyond introducing dedicated multidisciplinary curriculum about vaccinations and preventive behaviours for all university students and in particular to those attending healthcare *curricula*, an issue that requires increased attention to mitigate and control the COVID-19 pandemic. Unfortunately, population health and clinical prevention (i.e. vaccine behaviours) have long been relegated as a secondary topics in university *curricula* of most universities worldwide [11–13].

Moreover, evidence demonstrated how multidisciplinary educational interventions are the preferred strategy to improve students' adherence, attitude and knowledge about vaccinations [14–16]. That's because a multidisciplinary approach to teaching could contribute to look beyond the traditional approach to health information. Teaching complex health-related issues - through appropriate educational program across multiple disciplines, including social, psychological and behavioural sciences to complement the clinical and epidemiological ones - is key to better educate students about the multi-layer drivers and barriers of trust in vaccination, and defining how best to engage patients in preventive behaviours and to understand their behavioural and social reactions to immunization [17]. We think that our findings deserve attention in light of the particularly intense experience that the Italian health services had with COVID-19. We expected that the population living in this country would have higher levels of intention to vaccinate. The fact that this expectation does not find confirmation in our data makes our results warranted of public health attention and merits follow up studies designed for better understanding of the nature of the hesitancy among university students in Italy. Public health science should carefully consider the need to implement target and cultural-specific actions for university students, as influencing attitudes at an earlier stage of life can be more advantageous. People involvement around vaccines needs to be broad and multifactorial, with engagement at multiple levels [18]. These include policy-making, sensitizing programs' design, the development of risk communication strategies and psychosocial research aimed to understand people perspectives on vaccination behaviours in order to dialogue with them in an appropriate way. In this arena, educational initiatives—even not stand-alone interventions—are certainly an important step to ignite appropriate consciousness of individuals and communities

about the value of preventive behaviours as both their right and responsibility.

## Compliance with ethical standards

**Conflict of interest** The authors declare no conflict of interest.

## References

- Harrison EA, Wu JW. Vaccine confidence in the time of COVID-19. *Eur J Epidemiol*. 2020;35:325–30. <https://doi.org/10.1007/s10654-020-00634-3>.
- Godlee F. What should we do about vaccine hesitancy? *BMJ*. 2019;365:l4044.
- Signorelli C, Guerra R, Siliquini R, Ricciardi W. Italy's response to vaccine hesitancy: an innovative and cost effective National Immunization Plan based on scientific evidence. *Vaccine*. 2017;35:4057–59.
- Seanehia J, Treibich C, Holmberg C, Müller-Nordhorn J, Casin V, Raude J, et al. Quantifying population preferences around vaccination against severe but rare diseases: a conjoint analysis among French university students, 2016. *Vaccine*. 2017;35(20):2676–84.
- La Fauci V, Squeri R, Genovese C, Anzalone C, Fedele F, Squeri A, et al. An observational study of university students of health-care area: knowledge, attitudes and behaviour towards vaccinations. *La Clinica Terapeutica*. 2019;170(6):e448–53.
- Ryan KA, Filipp SL, Gurka MJ, Zirulnik A, Thompson LA. Understanding influenza vaccine perspectives and hesitancy in university students to promote increased vaccine uptake. *Heliyon*. 2019;5(10):e02604.
- Abalkhail MS, Alzahrany MS, Alghamdi KA, Alsoliman MA, Alzahrani MA, Almosned BS, et al. Uptake of influenza vaccination, awareness and its associated barriers among medical students of a University Hospital in Central Saudi Arabia. *J Infect Public Health*. 2017;10(5):644–8.
- Talbot TR, Bradley SF, Cosgrove SE, Ruef C, Siegel JD, Weber DJ. Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages. *Infect Control Hosp Epidemiol*. 2005;26(11):882–90.
- Suresh PS, Thejaswini V, Rajan T. Factors associated with 2009 pandemic influenza A (H1N1) vaccination acceptance among university students from India during the post-pandemic phase. *BMC Infect Dis*. 2011;11:205.
- VanBavel JJ, et al. Using social and behavioural science to support COVID-19 pandemic response. *Nat Hum Behav*. 2020;4(5):460–71.
- Rath B, Muhlans S, Gaedicke G. Teaching vaccine safety communication to medical students and health professionals. *Curr Drug Saf*. 2015;10(1):23–6.
- Allan J, Barwick TA, Cashman S, Cawley JF, Day C, Douglass CW, et al. Clinical prevention and population health: curriculum framework for health professions. *Am J Prev Med*. 2004;27(5):471–6.
- Pomrehn PR, Davis MV, Chen DW, Barker W. Prevention for the 21st century: setting the context through undergraduate medical education. *Acad Med*. 2000;75(7 Suppl):5–13.
- Marotta C, Raia DD, Ventura G, Casuccio N, Dieli F, D'Angelo C, et al. Improvement in vaccination knowledge among health students following an integrated extra curricular intervention, an explorative study in the University of Palermo. *J Prev Med Hyg*. 2017;58(2):E93–8.
- Afonso N, Kavanagh M, Swanberg S. Improvement in attitudes toward influenza vaccination in medical students following an integrated curricular intervention. *Vaccine*. 2014;32(4):502–6.
- Babcock HM, Gemeinhart N, Jones M, Dunagan WC, Woeltje KF. Mandatory influenza vaccination of health care workers: translating policy to practice. *Clin Infect Dis*. 2010;50(4):459–64.
- Orme J, de Viggiani N, Naidoo J, Knight T. Missed opportunities? Locating health promotion within multidisciplinary public health. *Public Health*. 2007;121(6):414–9.
- Larson H, Leask J, Aggett S, Sevdalis N, Thomson A. A multidisciplinary research agenda for understanding vaccine-related decisions. *Vaccines*. 2013;1(3):293–304.