



Vaccine hesitancy

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Game plan

- ▶ Review a few recent articles on vaccine hesitancy for Covid-19 vaccination...in US and worldwide, and data from a survey among tribal people in US

Objectives

- ▶ List main risk factors associated with vaccine hesitancy in US survey/s
- ▶ List countries with the lowest, and highest, proportions of vaccine acceptance worldwide
- ▶ List alternative study designs to more thoroughly evaluate factors associated with vaccine uptake/hesitancy
- ▶ Describe how you would design and implement a study among the tribal people whom you serve, that could help you measure the extent of vaccine hesitancy (and how to address it)
- ▶ Pass a quiz at the end

Take home messages

- ▶ We have only 'spotty' information on vaccine hesitancy in the US, and those published studies primarily represent convenience samples of respondents
- ▶ Vaccine hesitancy appears to be associated with sex/gender, race, education, income, and political party affiliation (!)
- ▶ Globally, huge variability in vaccine hesitancy/vaccine uptake is apparent, with certain parts of the world very resistant to uptake (based on literature review from PubMed articles)
- ▶ We do not have much information about vaccine hesitancy in US tribal people, although one survey provides data on importance of cultural values in promoting uptake
- ▶ Vaccine hesitancy is just one of a set of important challenges that need to be overcome to achieve global herd immunity to SARS-CoV-2 infection

Introduction



- ▶ Substantial amount of news coverage on vaccine hesitancy among different racial/ethnic groups in US
- ▶ Reasons for vaccine hesitancy appear to vary by group/s reported in the media
- ▶ Most published reports from the US are surveys conducted with diverse strategies and represent convenience samples, primarily
- ▶ Few published data exist on Covid vaccine hesitancy in tribal people in US, or anywhere else
- ▶ Most information on vaccine hesitancy in US tribal people appears in newspaper articles

Terminology clarification

- ▶ All the studies reported today mis-use the term, 'rate'. The authors actually describe prevalence, which is a % or proportion. A % or proportion still has utility in epi studies...just make the translation as you read the papers.
- ▶ Rates include both persons and time in the denominator, and new cases in the numerator. Prevalence does not include the time dimension.

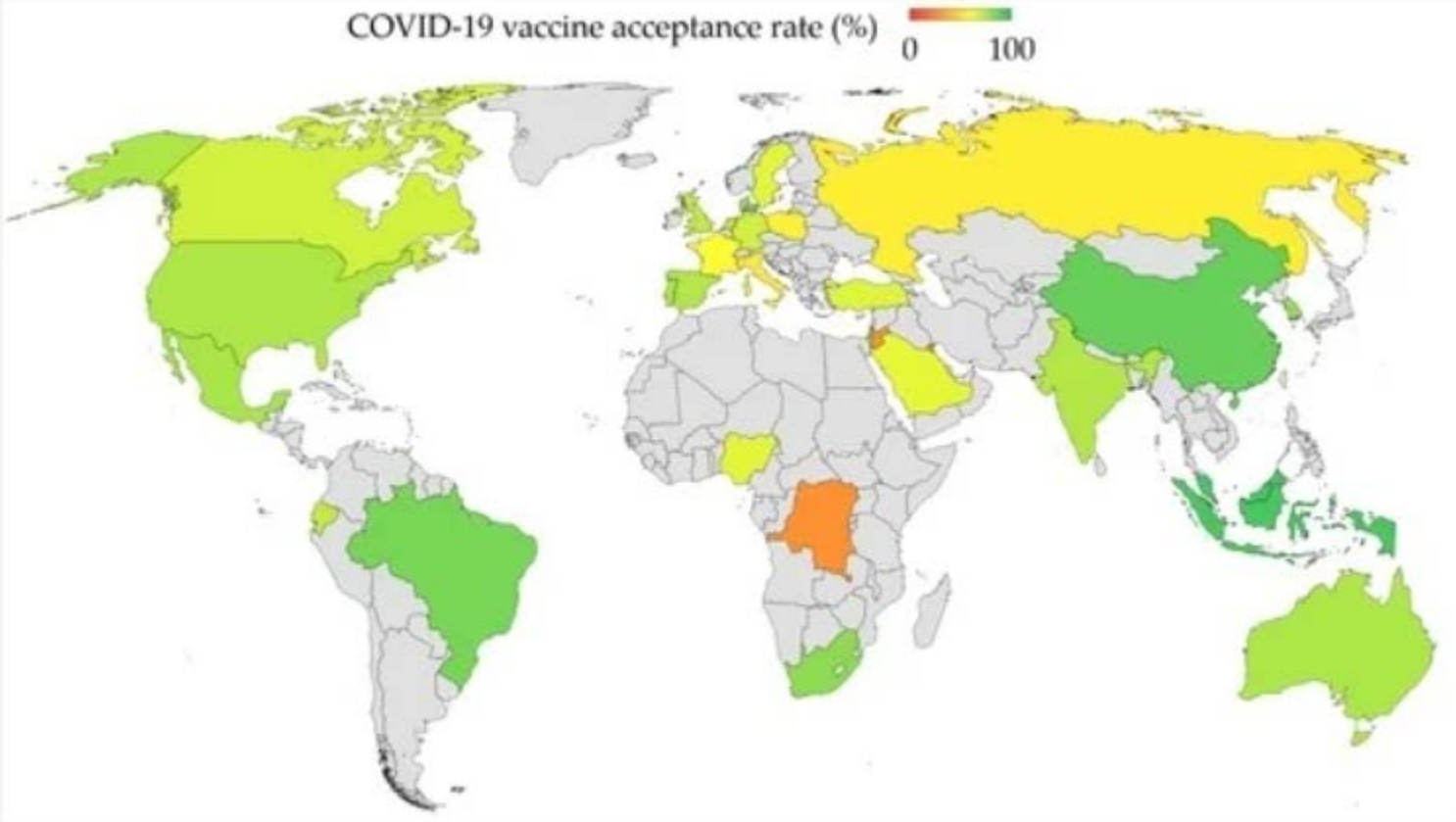
(example: the prevalence of reported vaccine hesitancy was 75/100 people surveyed , or 75%)

Study design, Global vaccine acceptance (Sallam, Vaccine, 2021)

- ▶ Systematic review, all English language papers
- ▶ 33 countries, some with multiple studies per country
- ▶ Vaccine acceptance broadly defined as willingness to receive the vaccine when it became available
- ▶ Studies organized by: general public, and health care worker surveys
- ▶ Author summarized percentages of intended uptake by country

Key findings, global vaccine acceptance systematic review

- ▶ Huge range of vaccine acceptance by country for general public, and for health care workers
- ▶ Acceptance in Ecuador 97%, Kuwait 23% for general public
- ▶ Acceptance in Israel 78%, DRC 27% among health care workers
- ▶ For general public, most studies in this review showed intended acceptance for vaccination >70% of people surveyed
- ▶ Of interest was that % changed substantially in a given country at different time periods (including US)..tho different survey strategies could explain much of that finding



Graphical abstract

Large variability in COVID-19 vaccine acceptance rates was reported in different countries and regions of the world. A sizable number of studies reported COVID-19 acceptance rates below 60%, which would pose a serious problem for efforts to control the current COVID-19 pandemic. Low COVID-19 vaccine acceptance rates were more pronounced in the Middle East, Eastern Europe and Russia. High acceptance rates in East and South East Asia would help to achieve proper control of the pandemic. More studies are recommended to assess the attitude of general public and healthcare workers in Africa, Central Asia and the Middle East besides Central and South America. Such studies would help to evaluate COVID-19 vaccine hesitancy and its potential consequences in these regions, and around the globe.

US survey of vaccine hesitancy and its correlates (Raja et al, 2021)

- ▶ Cross-sectional survey of volunteers, Nov, 2020
- ▶ 43 questions, self administered
- ▶ Recruitment through Amazon M-Turk, on-line, paid participation
- ▶ US residents aged 18-88 years, no health care workers
- ▶ 1756 volunteers
- ▶ Logistic regression analysis of correlates of hesitancy

Key findings, US survey of hesitancy



- ▶ 37.8% overall were vaccine hesitant
- ▶ Significant associations with: non-receipt of flu vaccine, female sex, black race, high school education or less, Republican party affiliation
- ▶ Common reasons for hesitancy: concern about side effects, need for more information, doubts about efficacy

Predictors of Hesitancy of a Free Covid-19 Vaccine

		95% Confidence Interval	
Predictor Variables	adjusted OR	Lower	Upper
Previous Influenza Vaccine Refusal	4.07	3.26	5.07
Gender			
Male	Reference	?	?
Female	2.12	1.70	2.65
Other	0.19	0.02	1.58
Income			
< \$41k	1.06	0.77	1.45
\$41k - \$89k	1.19	0.89	1.60
≥ \$90k	Reference	?	?
Education			
High School or Less	1.46	1.03	2.07
College or More	Reference	?	?
Race			
Black	1.54	1.05	2.26

Limitations of US survey of vaccine hesitancy

- ▶ Self selection of participants
- ▶ Primarily white female respondents
- ▶ No validation of any responses
- ▶ No 'deep dives' into details of acceptance or hesitancy as might be possible with interviews

Both articles are worth reading

- ▶ Discussion points center on herd immunity and the global perspectives if even a few countries have poor uptake (for any reason)
- ▶ Both articles suggest that tailored communication strategies for 'resistant communities or populations' may be warranted
- ▶ Media coverage in Indian country (at least that I have seen) has showcased elders and tribal leaders allowing themselves to be photographed or interviewed re: uptake and its importance
- ▶ Some good reviews of vaccine hesitancy and clinician approaches to dealing with that are available on line (see refs)

Tribal survey of vaccine hesitancy



- ▶ n=1435 respondents
 - ▶ 318 tribes represented from 46 states
 - ▶ 49 questions via on-line survey form, one open ended question
 - ▶ Sampling frame based on volunteers recruited from UIHI newsletters
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Key findings, tribal survey

- ▶ 75% of respondents willing to get Covid vaccine
- ▶ Of that 75%, most were concerned about potential side effects
- ▶ 75% of all respondents felt that getting vaccinated was a responsibility to one's community/tribe
- ▶ Most of the acceptors were confident in safety and efficacy of vaccines

- ▶ Among those hesitant to get vaccinated, concern about side effects was the overwhelming issue (higher % than among the acceptors)

Key recommendations from tribal survey

- ▶ Tailor messages to tribal cultural values
- ▶ Support tribal clinics and urban programs in leading the vaccine efforts
- ▶ Utilize effective ambassadors to promote campaigns (elders, elected leaders, others)
- ▶ Let native leaders lead public discussions to build trust around vaccination programs
- ▶ Address all concerns in tribal public health efforts, as people can and will change their minds about acceptance of vaccine as concerns are addressed

Vaccine hesitancy-related Quiz

- ▶ What is the difference between a rate and a proportion? (Almost all survey-based articles published since the start of the pandemic mis-use these terms.)
- ▶ In the US-based survey we discussed, what are the main correlates of vaccine hesitancy?
- ▶ From the UIHI-led survey, list three recommendations to improve vaccine uptake in tribal people
- ▶ If you were to design and implement a survey of vaccine hesitancy in tribal people in your region, how would you proceed?
- ▶ If you were to design and implement a survey of vaccine hesitancy in tribal people nationwide, how would you proceed?

references

- ▶ “COVID-19 vaccine hesitancy worldwide: a concise systematic review of vaccine acceptance rates,” Sallam, M. *Vaccines*.
<https://doi.org/10.3390/vaccines9020160>
- ▶ “Vaccine hesitancy and reasons for refusing the COVID-19 vaccination among the U.S. public: a cross-sectional survey,” Raja et al. Preprint available at *medRxiv*.
<https://www.medrxiv.org/content/10.1101/2021.02.28.21252610v1>
- ▶ Urban Indian Health Institute Covid-19 vaccination survey report, 2021
- ▶ McClure Article: [Vaccine Hesitancy: Where We Are and Where We Are Going - ScienceDirect](#)

- ▶ Grazie a Grazia, E. Tam Lutz, and Tom Weiser