Vaccine Hesitancy Amongst the Hadza Population of Tanzania

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Figure 1. Location of the Hadza tribe in Tanzania.

Figure 2. Hadza tribe members.

Introduction

Vaccination hesitancy plagues cultures globally, irrespective of the country. This phenomenon contributes to decreased vaccination acceptance rates, exposing a larger population to dangerous diseases (Tolley et al., 2023). Research into vaccination hesitancy can provide information as to why some cultures reject vaccinations, thus used to increase vaccination acceptance.

The Hadza people are a hunting-gathering tribe with many camps across Tanzania. While camps have varying cultural aspects, they are often very communal environments that value sharing food and living very close together (Crittenden, 2015) These communal practices could leave people at increased risk of the spread of viruses like COVID-19; therefore, it is important to look into the community's response to illness and their culture is around sickness and healthcare.

The ways in which the people of the Hadza tribe receive information and how vaccination information is interpreted influences the views on vaccinations held by the people. Studying the views and beliefs about vaccinations and the medical system in general, helps to better understand what regulations should be put in place and which avenues would be the best to spread helpful health information to the masses. Studies on a local scale address specific cultural views that would not be adequately addressed in nationwide studies.

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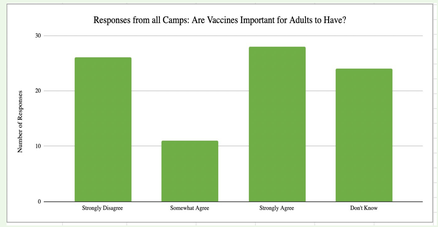
Survey research was conducted on the Hadza population of Tanzania, in order to better understand the culture's view of vaccines and the reasoning behind these views.

Figure 3. President of Tanzania, Samia Suluhu Hassan, getting the Covid-19 vaccination in efforts to prompt vaccination trust in the Citizens.

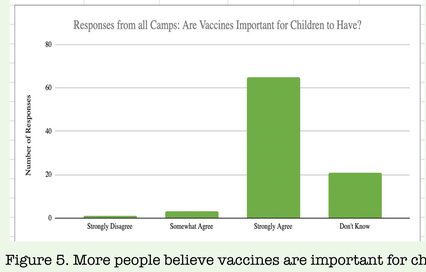
Results



Camp	Strongly disagree	Somewhat disagree	Strongly Agree	Don't know
All Camps	29.21%	12.36%	31.46%	26.97%
Darubini	40.7%	11.11%	11.11%	37.04%
Hukomako	20.00%	20.00%	50.00%	10.00%
Kideru	15.80%	5.26%	42.10%	36.84%
Sedaiko	50.00%	12.50%	12.50%	25.00%
Mkelenge	42.86%	28.57%	28.57%	0.00%
Sengelc	16.66%	11.11%	50.00%	22.22%

Figure 4.: Majority of participants said vaccines were important for adults

The majority of participants across camps (approximately 43%) agreed to some degree that vaccines are important for adults, while nearly a third disagreed strongly and the remainder (27%) did not have an opinion. There was a trend toward significant variation between camps (Fisher's Exact Test, p = 0.071). There was a significant difference between sexes regarding the importance of adult vaccines, with more females saying they did not know whether vaccines were important than males (Fisher's Exact Test, p = 0.029; Table X).



Camp	Strongly disagree	Somewhat agree	Strongly Agree	Don't know
All Camps	1.11%	3.33%	72.22%	23.33%
Darubini	0.00%	0.00%	70.40%	29.60%
Hukomako	10.00%	10.00%	70.00%	10.00%
Kideru	0.00%	5.30%	57.90%	36.80%
Sedaiko	0.00%	11.11%	55.55%	33.33%
Mkelenge	0.00%	0.00%	100.00%	0.00%
Sengelc	0.00%	0.00%	88.89%	11.11%

Figure 5. More people believe vaccines are important for children

The majority of participants across camps strongly agreed that vaccines are important for children (72.2%). The majority in each camp also strongly agreed with this statement (55.6% to 100%). There were no significant effects of either camp (Fisher's Exact Test, p = 0.08) or sex (not shown) on the distribution of answers.

What is a Vaccine?

Camp	Don't know	I don't understand	Health and Protection	Physical Descriptions	Children's Health
All Camps	50.00%	4.45%	33.33%	7.77%	4.45%
Darubini	65.38%	3.85%	19.23%	0.00%	11.54%
Hukomako	20.00%	0.00%	70%	0.00%	0.00%
Kideru	52.63%	0.00%	36.84%	10.53%	0.00%
Sedaiko	44.45%	11.11%	33.35%	0.00%	11.11%
Mkelenge	28.57%	28.57%	0.00%	42.86%	0.00%
Sengelc	52.63%	0.00%	36.84%	10.53%	0.00%

Roughly one-third of participants described a vaccine as something to protect health and/or prevent disease. Example responses include, "It prevents you from getting sick," "It is a medicine that helps the human body," and "It is a preventative injection." Nearly 8% of participants identified vaccines by their physical characteristics without contextualizing it in terms of health or disease prevention. Example responses include, "It's the needle you stick here in the shoulder" and "It is a needle that is being boiled," likely referring to sterilization techniques.

A considerable number (31.8%) in all camps) stated that they did not know whether vaccines are safe (Table 3). This latter percentage was greatest in Darubini (42.3%) and Kideru (47.4%).

Vaccines are safe?

Camp	Strongly Agree	Somewhat agree	Don't know
All Camps	64.77%	3.41%	31.82%
Darubini	57.69%	0.00%	42.31%
Hukomako	70.00%	10.00%	20.00%
Kideru	52.60%	0.00%	47.40%
Sedaiko	62.50%	12.50%	25.00%
Mkelenge	85.70%	0.00%	14.30%
Sengelc	77.78%	5.56%	16.67%

Vaccines are effective?

Camp	Strongly Agree	Somewhat agree	Don't know
All Camps	65.17%	3.37%	31.46%
Darubini	55.60%	0.00%	44.40%
Hukomako	70.00%	10.00%	20%
Kideru	52.60%	0.00%	47.40%
Sedaiko	62.50%	12.50%	25.00%
Mkelenge	85.70%	0.00%	14.30%
Sengelc	83.33%	5.56%	11.11%

No participants disagreed with the statement that vaccines are effective, though many said that they did not know (31.5% in all camps; Table X). Darubini and Kideru again had the largest percentage of participants who reported not knowing about vaccine efficacy (44.4% and 47.4%, respectively).

Discussion

- The lack of knowledge of what a vaccine is may indicate that there is scarcity of medical information provided for the Hadza in Tanzania. A 2021 global study showed that misinformation on COVID-19 led to the creation of conspiracy theories, which furthered vaccine hesitancy (Zhang, 2021).
  - The lack of knowledge is concerning in the tribe as it may have led to misinformation about what vaccinations are to be spread, thus leading to medical mistrust.
- An essential factor in the trust of vaccinations is a person's belief that the vaccination is both effective and will not cause harm. The high amount of Hadza who believe that vaccines are safe and effective could be attributed to Tanzania's 2021 COVID-19 vaccination campaign.
  - Before this intensive campaign, Tanzania's vaccination rate was quite low due to widespread skepticism, but after the campaign, about 63 % of the Tanzania population was vaccinated (Mfinanga, 2023). The basic knowledge of vaccinations provided to them helped to strengthen their belief that vaccinations are safe and will protect them from illness.
- There is a clear difference in opinion as to what age group vaccination is more important for. This difference could be due to the higher-than-average child mortality rate in Tanzania of 15% (Susuman, 2012), while the global average is around 3.8% (World Health Organization, 2022). This may explain why vaccinations are seen to be more important for children than adults, as children have a higher risk of getting sick compared to adults.

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