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Vaccine 38 (2020) 6971–6974

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Commentary

Sacred or secular? Exploring religious Coloradans' questions about vaccines

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1. Introduction

The intersection of religion and vaccination has become increasingly contentious. In 2019, in the wake of a national measles outbreak associated with vaccine refusal in religious communities, numerous states introduced bills to tighten or eliminate religious exemptions to vaccines required for school or daycare; New York and Maine succeeded [1]. Proponents of eliminating religious exemptions cite how major religions support vaccines and teach principles that align with public health goals of vaccination [2]. Opponents claim government intrusion on religious liberty and note that adherents of religions may not agree with all of their traditions' teachings. Researchers have previously explored vaccination concerns within religious communities. In 2017, Minnesota public health workers partnered with Islamic clergy to understand Somali Americans' vaccine concerns after measles spread through multiple communities [3]. Dutch researchers have examined how Orthodox Protestant communities, which have historically rejected vaccines, decide about vaccines [4]. Yet, we are unaware of such work unprompted by disease outbreaks. Thus, we formed a Community-Academic partnership to (1) explore religious individuals' concerns about vaccines in mainstream religious congregations unaffected by outbreaks, and (2) determine priorities for future vaccine-related interventions in religious communities.

2. Partnership formation

In 2019, we formed the CURIOUS Partnership – Coloradans Understanding Religion and Immunization thrOUgh Sustained Partnership – as a Community-Academic venture between the Executive Director (AM) of the Colorado Council of Churches (CCC) and an academic pediatrician with an interest in religion and vaccination (JW). The CCC is a Christian organization with 800 member churches and interfaith contacts that engages members to accomplish social justice work. It formally advocates for preventive care services and the concept of shared social responsibility to prevent diseases. Motivated and then supported by funding to foster community engagement and partnership, we proposed to visit Denver metro area congregations of various faiths, host listening circles with religious Coloradans of all ages, document their questions about vaccines, and form a community advisory board (CAB) to determine priorities for future interventions. We based our approach on the influential EPIS translational research framework, which encourages researchers to explore stakeholder priorities to carefully prepare tailored interventions before implementation [5].

We initially contacted congregations at the level of the individual head clergyperson to solicit the clergyperson's interest in hosting a listening circle at his or her congregation. If interested, clergy directed us to relevant parties within the congregation or coordinated the listening circle directly with us. We were highly inclusive in our outreach efforts, welcoming all congregational members to events, which were described as opportunities for anyone – especially those with questions or concerns about vaccines – to ask questions of a pediatrician and vaccination expert and hear questions from their congregational peers in a safe setting with trusted religious and community leaders present. To further tailor outreach efforts to each congregation and increase the comfort level for prospective attendees, we allowed each congregation to craft its own recruitment materials. In one community, this yielded a tailored event posting on the faith community's on-line monthly calendar. In another, the advertisement was a half-sheet flyer inserted into the weekly order of worship (Supplementary Materials). In a third, outreach consisted of directed e-mails from the congregation's liaison for children and family to an established group of mothers of young infants with listening circle information and expectations.

We scheduled listening circles to last 90 min, begin with introductions by a congregational leader, move to an open-ended time for questions, and end with a brief informational slideshow. Attendees provided their age, gender, and parental status. Listening circles were not tape- or video-recorded, but both partners transcribed participant questions during listening circles verbatim. Each investigator individually reviewed question lists, using con-

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https://doi.org/10.1016/j.vaccine.2020.09.034

tent analysis to organize questions into larger thematic categories. We resolved discrepancies by consensus. Finally, we recruited a 10-member CAB by soliciting participation from listening circle attendees. Over the course of two CAB sessions, we reviewed results from each listening circle, emerging thematic categories for participant questions, and CAB members' priorities for future vaccine-related intervention work in religious congregations. This work was approved as exempt by the Colorado Multiple Institutional Review Board.

3. Listening circles and participant questions

From September 2019 to February 2020, we hosted listening circles at 5 faith communities (3 Christian, 1 Buddhist, 1 Jewish). One of the Christian congregations was at a predominantly African American community; other congregations were majority White. We made multiple attempts to coordinate a listening circle with a Muslim faith community before the Coronavirus pandemic made the event – and others in additional faith communities – impossible during the funding period. 71 individuals attended listening circles, with a median age of 39 years (range 20–84). 70% (n = 51) were female, and 80% (n = 57) were parents. Listening circles lasted ~90 min and yielded a total of 137 questions, of which 102 were unique. Of the 102 unique questions posed by listening circle participants, only 3 were religious. Table 1 presents thematic categories with representative questions for each category.

Table 1
Thematic categories of attendees' questions about vaccines with representative examples.

Thematic Category	Representative Questions
Vaccine-Preventable Diseases & Risk	What are my risks of getting measles if I'm not vaccinated? What is human papillomavirus, and why do adolescents need a vaccine against it? Why does the influenza virus strain change every year?
How Vaccines Work	How do vaccines protect people? What is herd immunity, and why does it matter? Why are there different kinds of vaccines? (e.g. live-attenuated vs. inactivated, oral vs. injected)
Benefits of Vaccines	Have any vaccines eliminated the diseases they were made to prevent? How effective is each vaccine? Is there data on how much disease vaccines have prevented over time?
Vaccine Safety	Are vaccines associated with autism? Does the influenza vaccine cause influenza? Do vaccines contain mercury or other toxins?
Vaccine Schedules	What vaccines do children get and when do they get them? Who approves the vaccine schedule and any changes? Are there alternative vaccination schedules apart from the recommended ones?
Vaccine Manufacturing & Ingredients	What is in a vaccine? How are vaccines tested to make sure they are safe? Where are vaccines made? (e.g. US or abroad)
Vaccine Education	Where can I go to find reliable information about vaccines? What education efforts are ongoing for people with concerns about vaccines? How do we foster a culture of kindness in discussions?
Government and Pharmaceutical Companies	What is the government's agenda in promoting vaccines? How much money do pharmaceutical companies make from vaccines? Why are there policies requiring children to get vaccines to attend school?
Ethical Questions	How do we balance individual autonomy with the public good? What is the role of illness in childhood formation and development? How do we weigh the risks of vaccines with their benefits when these diseases are so rare today?
Vaccines and Physicians	Why is there so much resistance from physicians when parents have questions about vaccines? Do physicians even know what is in vaccines? Are physicians incentivized to avoid reporting vaccine side effects?
Negativity from Advocates & Opponents	Why do ads for vaccines use scare tactics or guilt tactics? Why is there so much stigma around not vaccinating? Why do natural parenting groups on Facebook spread so much fear about vaccines?
Vaccines and Religion (includes all 3 questions)	Are vaccines kosher? Are there religious passages that speak to reasons to vaccinate? Is there aborted fetal tissue in vaccines?

4. Implications and priorities

Our year-long Community-Academic partnership found that religious Coloradans' concerns about vaccines were overwhelmingly secular in nature, and we identified key preferences for future vaccine-related interventions to address secular concerns at the level of the religious organization.

In our sample of Christian, Jewish, and Buddhist Coloradans who were primarily young mothers, we identified overwhelmingly secular concerns about vaccines. Secular concerns were similar to those encountered in any physician's office, but they also explored ethical principles, physician education regarding vaccines, and negativity from vaccination opponents and advocates. Surprisingly, religious concerns about vaccines did not arise spontaneously. Even after we specifically asked, "Do you have any religious concerns or questions about vaccines?", participants at three congregations had no religious objections and were unable to think of theoretical ones. At the remaining listening circles, a young father asked about the association between vaccines and fetal tissues, alluding to a historically Christian prohibition around taking life, and a young mother asked if vaccines followed Jewish dietary laws. A third young father wondered if vaccination advocates could interpret sacred texts to support immunization. In short, participants in our sample were preoccupied by secular concerns about vaccines, not religious ones. We did not formally measure vaccine hesitancy, but several attendees reported having refused vaccines for themselves or their children. When asked to elaborate on their decisions, all participants had based their decisions on secular concerns, not religious concerns. Of note, we did not explore if congregants would be interested to learn more about how their faith traditions have viewed vaccines over time because the question never arose. Future work could explore whether knowledge of one's religions' views on vaccines influences individual congregants' perceptions of them.

These results complement existing mixed methods studies that suggest parents rarely refuse or delay vaccines for religious reasons. Dorit Reiss examined social media posts by parents seeking religious exemptions for their schoolchildren, finding many were claiming religious exemptions even when they did not have religious objections to vaccines or even a sincerely-held faith [6]. In a recent qualitative study of US clergy from six major faith traditions, we did not identify any religious concerns about vaccines among participating clergy [7]. Rather, participants overwhelmingly sought to leverage scriptural precedent and religious beliefs

to encourage vaccination from a public health perspective [7]. Our analysis of religious Coloradans' questions adds to these studies by providing evidence that an average layperson attending a religious congregation is disproportionately worried about the secular, not the sacred.

Our partnership also engaged a community advisory board to determine priorities for future vaccine-related interventions in religious congregations (Table 2). Our CAB recommended interventions focus on secular content: vaccine safety, vaccine efficacy, and the seasonal influenza vaccine. While the CAB acknowledged the value of answering questions about vaccines and religion, it believed such questions were too rare to merit inclusion in a formal presentation and could be addressed ad hoc in informal Q&A times. The CAB emphasized the importance of small group settings, the presence of trusted clergy and community leaders, a welcoming atmosphere, and a handout that was easy to read with links to trusted websites or other information sources. The CAB also emphasized the importance of stories from those affected by vaccine-preventable diseases. At one listening circle, a retired nurse spoke about training on iron lung machines as a new graduate during polio outbreaks. At a separate event, an elderly man shared about suffering painful blisters from shingles. The CAB stressed how these stories powerfully appealed to attendees' emotions and were doubly impactful because of the shared experience and trust between congregational members. Finally, our CAB suggested future work should measure the impact of interventions on attendees' attitudes, create an online module for other clergy and congregational health leaders to use, and consider including other preventive health measures.

These CAB recommendations align with those from a previous national public health and faith-based partnership to improve influenza vaccination. From 2009 to 2016, the Interfaith Health Program at Emory University partnered with 10 diverse faith-based organizations to improve influenza prevention in hard-to-reach populations [8]. The project's Model Practices Framework emphasized similar components: identifying trusted leaders, marrying stories with data, building trust, maintaining relationships, and enduring in collaboration [8]. Interestingly, the framework identified an organization's faith mission as the foundational driver of engagement with immunization-related work. In our experience, clergy simply hosted listening circles because vaccination was a popular topic in their congregations and they appreciated the chance to have a topic expert facilitate a dialogue with interested congregants. Regardless, our work – and that of the Interfaith Health Partnership – highlight how faith-placed events that focus on common, secular questions about vaccines can engage large numbers of community members in the presence of a trusted leader to shape communal perceptions of vaccination. Given the limited energies of public health workers and physicians, these events are a unique way vaccination advocates can increase their public health impact several-fold.

Table 2
The CURIOUS Partnership's Community Advisory Board recommendations for future vaccine-related intervention work with specific board priorities by intervention component.

Component	Priority
Content	General overview of vaccination schedules (and rationale) for children, adults, and seniors. General overview of vaccine safety and efficacy. Specific information about the influenza vaccine and why it is needed every year.
Format	Small group of 10–20 individuals, limited to congregational members. Introduction by clergy with trusted community leader present. Question and answer time that is welcoming and tailored to attendees' concerns. Stories from congregants who have experiences with vaccine-preventable diseases. Easy-to-read handout with pictures, large font for seniors, and links to trusted websites.
Aims	Measure impact of events on attitudes toward vaccines with pre/post-surveys. Create an online module so clergy and physicians can form partnerships elsewhere. Expand work outside of vaccination to include other preventive health measures.

Our partnership had several limitations. Due to time constraints, funding limitations, and the coronavirus pandemic, we visited only five congregations. We were not able to visit congregations within other major faith traditions, such as Islam or Hinduism. We did not visit non-English-speaking congregations, nor did we visit rural or frontier communities. Finally, we did not rigorously measure vaccine hesitancy, so it is unclear what proportion of participants were vaccine accepters or refusers.

Despite these limitations, we believe our partnership provided important public health insights. Physicians and public health officials who are contemplating novel ways to address vaccine hesitancy should consider partnerships with religious communities. They need not worry about studying Scripture or theological premises to do so. Instead, vaccination advocates should focus on building trust with respected clergy, addressing vaccine safety and efficacy, and telling stories about people who have been affected by vaccine-preventable diseases. Overwhelmingly, our listening circle participants expressed a strong desire for more information about vaccines, and they believed that their peers inside and outside of their faith community desired the same. By focusing on the secular, vaccination advocates may have the greatest impact on those who embrace the sacred.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

We would like to acknowledge the CURIOUS Partnership's hosting congregations and community advisory board members for their warm partnership and thoughtful questions and feedback.

Funding

This project was funded by NIH/NCATS grant UL1TR002535 through the Colorado Community and Translational Sciences Institute's (CCTSI) Community Engagement Partnership Development grant.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.vaccine.2020.09.034.

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