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Perceptions of vaccination within a Christian homeschooling community in Pennsylvania

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ABSTRACT

Background: More than 1.8 million American children ages 5–17 are being educated at home. The percentage of school-aged children in the United States who are homeschooled increased from 1.7% in 1999 to 3.4% in 2012. Every state has established school-entry vaccination requirements for kindergarten students, but most states exempt homeschoolers from these regulations. The goal of this study was to use qualitative methods to examine the vaccination perceptions and practices of Christian homeschooling families in Pennsylvania.

Methods: A qualitative study (focus groups) of Christian homeschooling parents representing a diversity of vaccination practices (full, partial/delayed, and no vaccination) was conducted in south-central Pennsylvania in 2017. An analysis using a grounded theory approach identified themes that strongly aligned with constructs from the Health Belief Model.

Results: Many of the perspectives expressed by the study population aligned with those of the general American population, including uncertainty about the risk from vaccine-preventable diseases, concerns about the efficacy and safety of vaccines, and confusion about conflicting vaccine information. The Christian homeschooling parents expressed two especially prominent perceptions: a belief that they had a very low risk of contracting infectious diseases because God has provided them with the natural tools necessary for health and a stronger-than-typical sense of empowerment related to parental decision-making and autonomy. Participants expressed that they were generally open to honest communication about vaccination with physicians who respect parental authority.

Conclusions: Homeschooling families have diverse vaccination practices. Pediatricians and other healthcare practitioners should not make assumptions about health beliefs in this community, and should instead engage parents in conversations about their risk perceptions and vaccine decisions.

1. Introduction

Homeschooling is increasingly popular in the United States. The percentage of American children ages 5 through 17 who are educated at home steadily increased from about 1.7% (850,000) in 1999 to 2.2% (1.1 million) in 2003, 2.9% (1.5 million) in 2007, and 3.4% (1.8 million) in 2012 [1]. During the 2015–2016 school year, at least 1 in 30 school-aged children in the U.S. was homeschooled [2]. The exact number of homeschooled children is unknown. Many states do not collect any data about homeschooled children. In some states, parents are not even required to notify government officials that their children are being homeschooled [3,4]. However, the National Household Education Survey conducted by the U.S. Department of Education shows a steadily increasing rate of home-based education. Rates of homeschooling are similar for parents with different levels of education and different income levels, but they are higher in rural areas (4.5%) than in suburban (3.1%) and urban (3.3%) areas and higher among white, non-Hispanic populations (4.5%) than other racial and ethnic groups [1].

Many homeschooling families select this educational pathway for religious reasons. In the 2016 National Household Education Survey, the most important reasons for homeschooling reported by parents were "a concern about the environment of other schools" (80%), "a desire to provide moral education" (67%), and "a desire to provide religious instruction" (51%) [1,2]. All of these reasons may relate to religious and spiritual beliefs. More than one-third of homeschooled students (38%) learn from materials published by a church or other religious organization [1]. For conservative Christians, the decision to homeschool often relates to

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fundamentalist values such as a desire to resist contemporary secular culture; a suspicion of governmental authorities and professionals in education, healthcare, and social work; and a firm belief in the rights of parents to make all decisions for their families [5].

Many of the religious values that lead families to homeschool may also apply to parental perspectives on vaccination [6]. American parents who are hesitant to vaccinate their children tend to place a higher value on purity and liberty and a lower value on authority than parents who are not vaccine-hesitant [7]. The value of purity that raises alarms about the undesirable exposures children may encounter at public schools may correspond with a desire to protect children from unnatural exposures like the "toxins" that some parents perceive to be present in vaccines [7]. Parents who strongly value individual freedoms and distrust people in positions of authority tend to be wary of perceived attempts to curtail parental autonomy [7]. That wariness may extend to questioning the validity of governmental recommendations and regulations pertaining to health.

The sparse published research about vaccination in the homeschooling population suggests that home-educating families are less likely to vaccinate than the general public [8–11]. Every state has established school-entry vaccination requirements for kindergarten students, but most states do not require homeschooling families to provide documentation of compliance with these regulations [12,13]. Parents enrolling their children in public schools must provide proof that their children have been vaccinated or must submit documentation supporting a medical, religious, philosophical, or personal belief exemption [14]. In states where nonmedical exemptions (NMEs) are not allowed, healthy children must be vaccinated or have a documented medical exemption before they can attend a public school [15]. By contrast, parents who plan to educate their children at home can skip the recommended vaccinations for infants, toddlers, and children because they know they will not need to provide proof of vaccination to school authorities. For public school families, opting out of vaccination requires parents to take extra effort to obtain documentation of exemption. For homeschooling families, who typically are exempted from school-entry vaccine requirements, opting in to vaccination may require more time and money than choosing to delay or skip vaccines. Homeschooled children are significantly less likely than public school children to have a medical home (that is, a primary care provider who is available to coordinate all medical care) and to have had a medical visit in the past year [9]. Vaccination would require additional visits to healthcare providers and incur the direct and indirect costs associated with those visits.

Understanding the vaccination knowledge, attitudes, and practices of homeschooling families is important for several reasons. First, the homeschooling population has been the focus of little health-related research even though the population is growing in size and now accounts for a sizeable proportion of school-aged children and adolescents. Second, homeschooled children may be a hidden high-risk population for vaccine-preventable diseases (VPDs) because of lower-than-typical vaccination rates. Third, homeschooled families are part of the larger geographic communities in which they reside. If vaccination rates are low among homeschooling families, their neighborhoods and towns might not achieve the herd immunity levels necessary to prevent outbreaks.

Pennsylvania includes homeschool students in their data about vaccination rates, but the statistics are not presented separately by school type. During the 2016–2017 school year, 0.4% of kindergarten students had a medical exemption from vaccine requirements and 1.9% had an NME [13]. Only about 93.6% of kindergarteners in Pennsylvania in 2016 had received two doses of measles vaccine, and 8.1% of kindergarteners attended school under a grace period or provisional enrollment because of incomplete vaccinations, the highest of any state [13]. The rate of NMEs from school-entry vaccines increased in Pennsylvania between 2010 and 2016 [16], and NMEs are likely to be higher among homeschooled children than children who attend public schools. The goal of this study was to use qualitative methods to examine the vaccination perceptions and practices of Christian homeschooling families in south-central Pennsylvania.

2. Methods

We conducted four small focus groups (n = 2–5) with parents of homeschooled children in south-central Pennsylvania during November and December 2017. Purposive sampling was used to identify and recruit homeschooling parents who identified as Christians. Christianity is the dominant religion in the U.S., with 70.6% of American adults identifying with this religious group in the 2014 U.S. Religious Landscapes Study [17]. Evangelical Protestants are the largest subpopulation, accounting for 25.4% of all Americans [17]. The average Evangelical considers religion to be very important, attends church at least once weekly, believes the Bible should be interpreted literally, is affiliated with the Republican Party, identifies as having conservative politics, and desires a smaller government that offers fewer services [17].

The Institutional Review Board of Messiah College approved all study procedures prior to initiation of data collection. Participants were primarily recruited at homeschooling group events where parents could participate in a discussion group while their children were engaged in a learning activity. One additional participant was recruited for an in-depth interview via a Facebook homeschooling page. To be included in the study, participants had to be parents of at least one school-age child and to currently or previously have homeschooled at least one of their children. One parent per family was allowed to participate. No incentives were offered for participation. All participants provided written documentation of their consent to participate.

A semi-structured interview guide was used to elicit participant perspectives about the composition of their families, the ways their families have approached vaccination, the factors that have influenced their vaccination decisions, whether state vaccination requirements had any impact on their decision to homeschool, and what role they think is appropriate for the government to take in regard to vaccination. School-entry vaccine requirements were not a factor in any of the participants' decisions to homeschool their children. Although the groups were small and the guide asked general questions, the same themes emerged from all of the conversations, which suggested that theoretical saturation had been achieved [18]. Focus groups and interviews lasted an average of 38 min each (range: 30–40 min). All sessions were audio-recorded and subsequently transcribed verbatim.

Data were analyzed using thematic coding. First, the transcripts were read line-by-line by two independent coders (jdm, khj) to create a list of preliminary themes. The two independent coders then met to create a shared codebook that included a description and meaning for each code. Updates were made to the codebook as new categories emerged during subsequent readings of the transcripts. The data analysis process used a grounded theory approach. We did not decide *a priori* to use a particular health behavior theory as a framework, but as both coders read the transcripts they independently observed that the themes from the focus groups strongly aligned with constructs from the Health Belief Model (HBM) [19,20]. The codebook was revised to more completely delineate the distinct themes that aligned with each of the six constructs of the HBM, and both researchers independently re-coded all of the transcripts. Consensus was reached. After coding was complete, each coder independently created a table

featuring the most common themes for each of the six HBM constructs and several quotations that best represented each theme. The independent coders then met to compare results and adjudicate the few discrepancies between their tables. The selected excerpts include statements from all of the focus groups, and most participants are quoted at least once.

3. Results

All fourteen participants (13 mothers and 1 father) were white and resided in south-central Pennsylvania. Families, on average, had 3 children (range: 1–6). The participant with the youngest child was a mother of two who was in her second year of homeschooling. The participant with the oldest child was a mother with six children between the ages of 6 and 25 years who had been homeschooling for 20 years. All of the participants had at least one child in elementary school (grades 1–6). All of the participants were actively involved in churches within the Evangelical Protestant tradition. Participants represented a diversity of vaccination practices: four reported that they fully vaccinated their children according to the CDC schedule, two reported that they fully vaccinated their children but delayed some of the vaccines, four reported that their children were partially vaccinated, and four reported that their children were unvaccinated. The most commonly refused vaccines were chickenpox, hepatitis A and B, human papillomavirus (HPV), and influenza. The most commonly delayed vaccine was the measles, mumps, rubella (MMR) shot. Among the four participants with unvaccinated children, two vaccinated their older children but refused all vaccines for their younger children.

The constructs of the HBM as applied to behavioral vaccinology include perceived susceptibility to VPDs, perceived severity of VPDs, perceived benefits of vaccinating, and perceived barriers to vaccinating (Table 1) as well as cues to action and self-efficacy (Table 2). Perspectives related to all of these constructs were expressed during the focus group conversations.

3.1. Perceived susceptibility

Parents reported a lack of perceived susceptibility to VPDs among their homeschooled children. One major theme was the perception that homeschooled children have a low risk of exposure to VPDs because they are isolated from school-going children. In some cases, parents reported that their pediatricians supported this view. Another common belief was that God provides natural tools for health. Nutritious foods, herbal remedies, chiropractic care, and healthy lifestyles are perceived as being provided by God as sufficient tools to protect children from VPDs and other illnesses.

3.2. Perceived severity

In general, parents did not consider VPDs to be threats to their children's health and wellbeing. Many parents expressed a belief that childhood infections are part of God's plan to develop children's immune systems naturally. Some parents acknowledged that some VPDs could cause serious complications such as sterility, brain damage, and death. Many reported that they had endured childhood diseases like chickenpox that are now vaccine-preventable, so they considered those diseases to be mild ones that do not need to be averted.

3.3. Perceived benefits

Participants understood the idea of community immunity. For some parents, herd immunity was perceived to be a valid justification for governments to mandate vaccination of healthy children. Others reported that they vaccinated their own children to help protect their friends' medically compromised children who cannot be vaccinated and are especially vulnerable to serious complications from VPDs. At the same time, there was suspicion that the benefits of vaccinations are overstated by the government, vaccine manufacturers, and healthcare providers. Some parents perceived vaccines to be commercial products designed to make money rather than protect public health, and some expressed cynicism about the government telling the truth about vaccines when business interests are involved.

3.4. Perceived barriers

Participants identified several major barriers to vaccinating their children. Many parents expressed significant concerns about vaccine safety and side effects like autism. Some parents reported that they accept vaccines that have been used for decades but refuse newer vaccines, like chickenpox, hepatitis A and B, HPV, seasonal influenza, pneumococcus, and rotavirus, because they feel that these vaccines have not yet been sufficiently tested. Concerns arose from conflicting information about whether vaccinations are helpful or harmful to children. Many expressed fear about the adverse effects of receiving multiple vaccines at one time and about the potential negative impacts of receiving so many vaccine doses during infancy and childhood.

3.5. Cues to action

Physicians were identified as authority figures who influence parental decisions about vaccination. Many parents reported trusting that doctors want the best for their kids, even when they have opposing viewpoints on vaccination. However, some interactions with pediatricians were described as adversarial or badgering. Physician pressure was sometimes effective in convincing parents to vaccinate, but sometimes it impaired the relationship between the provider and the parents. Many parents reported feeling pressure from at least some friends and family members not to vaccinate their children. Some of these individuals who pressured parents not to vaccinate were nurses, natural health practitioners, dieticians, and other individuals who were perceived to have expertise in preventive health. Others were not healthcare professionals but were persistent in communicating an anti-vaccine message.

3.6. Self-efficacy

Participants consistently and strongly expressed that parents should have the autonomy to make their own decisions about childhood vaccination. Parents reported feeling empowered by the research they did about vaccination, whether that consisted of limited internet browsing to confirm their initial inclinations or in-depth scrutiny of online medical resources, books, and journals. Several parents reported that reading about vaccination in sources like *The Vaccine Book*, which contradicts the recommendations of the U.S. Advisory Committee on Immunization Practices (ACIP) by supporting the delay and spacing of vaccinations [21], empowered them to make confident decisions about whether to vaccinate or not vaccinate their children. Some participants said that when they were new parents they did what their doctors told them to do, but now that they are experienced parents they have the confidence to challenge the status quo. In some cases, parents who did not feel respected by physicians left those practices and sought care from providers who share their perspectives or at least do not challenge them.

Table 1
Key themes related to perceived susceptibility, severity, benefits, and barriers in the Health Belief Model (HBM).

HBM component	Themes	Representative quotations
Perceived susceptibility: *perceptions of likelihood of contracting vaccine-preventable diseases*	Homeschooled children have a low risk of exposure	"They're homeschooled. They're not in daycare. They're not around other kids." "[Our pediatrician] said 'well, if you're at home and you're homeschooling, and your community has no requirements, then you don't have to [vaccinate] right away.' . . . Because we don't do daycare and we don't have a lot of exposure, he doesn't feel it's something we need to worry about."
	God provides natural tools for health	"I just believe in supporting their immune system in other ways, naturally with supplements and healthy foods. And my kids have been so healthy. I've been so blessed." "I want to be the best steward of my body and my kid's body and their health. And I think God put on this Earth the things that are necessary to keep us healthy."
Perceived severity: *perceptions of the harm caused by vaccine-preventable diseases*	Diseases are natural and stimulate immune system development	"God created our bodies to fight off disease. It builds our immune system when we come into contact with, like, regular childhood diseases." "[Kids] should not go through life and never get sick. It's not healthy to never get sick. You don't build any natural immunities."
	Some vaccine-preventable diseases are severe	"Then I go online and I look at what disease it's preventing and how bad that disease is. And often when I look at, like, 'you could die from that' or 'your kid could be sterile or lose their hearing or have brain damage,' then I'm often, like, 'oh, we better vaccinate.'"
	Most infectious diseases are not severe	"I had the chickenpox as a kid. I was fine, you know. Two week illness. I'm fine."
Perceived benefits: *perceptions of the value of vaccines*	Community immunity is valuable	"So you hear about things becoming an issue in California or, you know, some measles or some of those things that are just becoming more of an issue. So I don't have a problem in this way for government to say, 'you know, for the common good we need to have vaccines across the board.'" "I have some friends that have medically fragile children who were born prematurely, or whatever. They can't be vaccinated. And so I've heard them kind of say, 'you know, we're relying on you and your kids to make these choices, and do it for us, so that our kids can go to school and into the community without having to worry about these things as much.' And that is definitely a deciding factor for me as well."
	The benefits of commercial vaccines are overstated	"I don't have a comfort level with my government that their desire is really to help the people improve their health. It's all about money now." "You can't trust what the government tells us. I mean they tell us what, you know, whatever company is paying them a crap load of money to say. So sure, they say something is safe. They say something is good for you. But is it really?" "It's hard to make a decision, because both sides can be skewed and they both lend themselves to fear-mongering. That's why the Holy Spirit is really helpful."
Perceived barriers: *perceptions of the risks or costs of vaccines*	Fear of adverse reactions	"I always hated vaccine day. I was like, 'oh my gosh, what if they have a reaction?' And then all the autism stuff." "I don't have a real good comfort level that just because they say that it's safe that it is safe. I don't want him to be a guinea pig for safety." "There's the Vaccine Injury Fund that the government has, which wouldn't exist if they were completely safe."
	Newer vaccines have not been tested enough	"It's a new vaccine, and I like to wait and see the long-term effects of things. So, anything that is new, my kids aren't going to get, simply because we don't know how that is going to play out in 10 or 15 years." "I feel like I'm doing all the vaccines that have been around for 20 years. I'm comfortable with those."
	Conflicting information	"I began to research them and, of course, you know you could read a blog about anything. You can read blogs for vaccines, and you can read blogs against vaccines. And I was like, 'oh my word, how do you even know what's true?' I mean let's talk about fake news. There's so much of that with any topic, and it's not necessarily fake, but it's one slant and another slant."
	Vaccines need to be spaced out	"I talked to the doctor and I was like 'you know, this is too much.' So she spread it out further, so that they were going in for more shots but they didn't get so much in their little bodies at one time." "I started to do a little bit of research, and read some different things about vaccinations, and I felt that there was too much at one time. Especially comparing the schedule now to the schedule maybe in '70 s or '80 s when I was little."

4. Discussion

The participants in our study of Christian homeschooling parents represented a diversity of vaccine practices, ranging from complete non-vaccination to full vaccination. Their vaccine beliefs were not as divergent. When the Health Belief Model was applied to vaccination in this population, two themes appeared to be especially prominent: parents having a special sense of protection from VPDs (that is, low perceived susceptibility) and a strong sense of empowerment related to parental decision-making (high self-efficacy). These findings align with the few previous studies that assessed attitudes toward vaccines among homeschooling parents, which include a 2010 survey of 124 homeschooling parents in western Pennsylvania [10] and a 2016 online survey in Washington state that included 78 homeschooling parents [11]. Our qualitative study complements these quantitative analyses by providing new insights into how homeschooling families make health decisions.

Christian homeschooling parents may perceive their risk of VPDs to be low for two primary reasons. First, homeschooling families consider themselves to be isolated from the general public. They may therefore perceive their children to have lower-than-typical risk of contracting infections and suffering the consequences of them. Second, they believe that God has provided them

Table 2
Key themes related to cues to action and self-efficacy in the Health Belief Model (HBM).

HBM component	Themes	Representative quotations
Cues to action: *strategies that promote vaccinating (or not vaccinating)*	Physicians are seen as authority figures	"[The doctor] terrified me, and he made me feel like I was like a terrible parent and I was gonna kill my child if I didn't get her vaccinated... Ever since that, all of my kids have been vaccinated." "There has been a lot more pressure when we go into our appointments to get the kids caught up. To do vaccines that I've already said 'no' to. To sign all sorts of paperwork that I didn't have sign before. So it is becoming more adversarial." "Doctors want your kids to live, so I just feel like I have a little more trust in doctors than I have in the public school system."
	Peer and family pressure not to vaccinate	"I have some friends that are pretty against it that send me stuff all the time." "My mom is a nurse. When I was pregnant, her nursing friends were coming to me and saying 'now, you're not going to vaccinate, right?'... It's been interesting having people who have done nursing for 30 + years telling me 'I wouldn't do this to my kid.' Makes you think about it before you do it to yours."
Self-efficacy: *confidence in one's own actions*	Vaccinating (or not) should be the choice of parents	"It's my child. It's my decision." "One thing that bothered me was doctors just assuming I was just uneducated and I just was saying 'no,' you know? But I feel like every parent has a right to make an educated decision for their child... I didn't want to just do what the masses told me to do. I wanted to make my own educated decision."
	Research empowers parents to make their own decisions about vaccination	"When I became pregnant with my first daughter, I just read, like, two books. And I pretty much had decided at that point that I did not want to vaccinate her." "Within my friend group, if the mom is doing the research and the husband is willing to go along—homeschooler or not—they will generally do a delay." "My husband read an article in *Wired* magazine that was pro-vaccine or just was kind of putting a lot of the myths away. I just remember reading that with him and discussing it and, kind of, we were on board with the same thoughts as the article had presented."
	Confident parents will find a doctor who agrees with them	"I wanted to make sure we were choosing [a pediatrician's office] that said 'fine, if you don't want to vaccinate your child we're okay with that'." "I go to a practice that is a pediatrics office, so there was always tons of pressure from them. 'You must do this, you must do this.' ... I'm now a more experienced mom. I've learned more. I'm better at standing up to the doctors." "I had one doctor in this area years and years ago, and he was cool with [not vaccinating], but his partners were not. So it was starting to get a little uncomfortable. We ended up moving and switching [doctors]... [The physician's] stance on vaccinations will dictate her stance on 'are you gonna shove antibiotics down my child's throat every time there's, you know, a cough.'"

with the natural tools necessary for health. These perspectives about perceived susceptibility generally align with sentiments expressed in the Washington state survey, in which homeschooling parents were significantly more likely than parents of children attending public or private schools to agree that "if my child is not vaccinated for a disease, the child is at low risk of getting the disease" (58.3% vs. 42.8%), "the body can naturally protect itself from diseases that vaccines are intended to prevent" (59.8% vs. 27.2%), and "healthy children do not need vaccinations" (41.3% vs. 14.6%) [11].

The reality is that unvaccinated homeschooled children may have a higher-than-average risk of contracting VPDs if they preferentially mix with other people who have delayed or refused vaccines. Under-vaccination has played a key role in recent outbreaks of measles and pertussis in the U.S. [22]. Homeschooled children may encounter VPDs when they use the public schools for selected educational and recreational activities or when they invite international missionaries into their homes. In Pennsylvania, many school districts allow homeschooled children to participate in extracurricular activities such as varsity sports and musical ensembles. Many Evangelical churches support international missionaries and host them in their homes when they return to the U.S. for visits. Visitors may expose their host families to infectious diseases that are no longer common in the U.S. but continue to have high incidence rates in other world regions.

Regarding self-efficacy, homeschooling parents tend to be confident individuals who place a high value on autonomy and express distrust of secular authorities [5]. These align with the Washington state survey's results about attitudes toward regulation of vaccines, in which homeschooling parents were significantly more likely than parents of children attending public or private schools to agree that individual states should grant vaccine exemptions for religious beliefs (83.6% vs. 59.2%) and personal beliefs (81.0% vs. 38.8%) [11]. Parents who homeschool their children are much less likely than other parents to trust the vaccine advice given to them by healthcare providers [9]. Even parents who report a general trust in their children's pediatricians may report skepticism about the vaccine information these physicians provide [23]. In the survey of parents in western Pennsylvania, only 33% of homeschooling parents agreed that they would be more likely to vaccinate their children if it was recommended by their healthcare provider, compared to 88% of parents in a nationwide survey [10]. In our study, parents tended to trust their own research more than information provided by doctors. They also reported seeking out physicians and other clinicians who share their perspectives on health, with vaccine-hesitant parents finding care providers who support their decision not to vaccinate.

A recent study of vaccine hesitancy classified parents based on six moral foundations: authority/subversion, fairness/cheating, care/harm, loyalty/betrayal, purity/degradation, and liberty/oppression [7]. Feeling protected from VPDs aligns with the purity concept. Feeling empowered to make autonomous decisions rather than trusting physicians and other medical authorities aligns with the liberty and authority constructs that emphasize individual freedoms and resent intrusions by others. Of the six moral foundations, these three items were most strongly associated with vaccine hesitancy in the general population [7]. They were also the values that were prominent in our study of homeschooling families, no matter what decisions they had made about whether and when to vaccinate their children.

Many of the other perspectives expressed by the participants in our focus groups aligned with those found in the general U.S. population, including doubt about vaccine safety, efficacy, and necessity [24–26]. These are not distinctively American concerns. In recent international studies, adults in many countries have reported a lack of vaccine confidence, and some of those individuals have indicated that their religious beliefs contribute to their vaccine hesitancy [27,28]. These concerns are also not new. One hundred years ago, parents of school-aged children in the U.S. were already reporting anxiety about contaminated vaccines, distrust of healthcare professionals, and aversion to government-mandated vaccination [29]. However, vaccine hesitancy is growing in prominence [24]. More parents are reporting uncertainty about the risks that VPDs pose to children (perceived severity), the individual and communal protection conferred by vaccines (perceived benefits), the safety and efficacy of the many vaccines that are now routinely recommended for children (perceived barriers), and the overwhelming amount of conflicting information urging vaccination or non-vaccination (cues to action).

American homeschoolers are more likely than school-going families to believe that VPDs are rare and not serious, vaccines are not effective in preventing VPDs, vaccines can cause learning disabilities and dangerous side effects, newer vaccines have not been tested enough, and too many vaccines are recommended [9–11]. As homeschooling grows in popularity in the U.S., especially among Evangelical Christians, there is an increasing need for research about the religious, spiritual, and other factors that influence health beliefs and practices in this population. This qualitative study is a first step toward increasing our understanding of health beliefs in the Christian homeschooling community. The primary limitation of this study is that the number of participants was small and they represented homeschooling parents from only one part of one state. Additional research that includes a more diverse set of participants and further explores the theological dimensions of vaccine refusal will provide a more nuanced understanding of the health beliefs and behaviors of home educators.

5. Conclusion

Homeschooling families have diverse vaccination practices. Even within the Evangelical Christian sub-community, some parents fully vaccinate, some partially vaccinate, and some do not vaccinate. It would be inappropriate to assume that homeschoolers as a group are anti-vaccine. However, there are important differences between families that use public schools and those that educate at home, and the prevalence of partial or complete non-vaccination is almost certainly higher among homeschooled children than among children who attend public schools. The number of homeschooled children in the U.S. is growing, and it is likely that this population has a higher-than-typical vulnerability to VPDs due to under-vaccination. Our study suggests that Christian homeschooling parents may feel uniquely protected from diseases and have a low perceived risk from VPDs. They may also place a high value on parental authority and feel empowered to make health-related decisions for their children. Our participants emphasized that they are wary of authority figures, but expressed that they are open to honest communication with physicians who respect parental autonomy. Pediatricians, nurses, and other clinicians should not make assumptions about health beliefs in the homeschooling community. Instead, they should engage parents in conversations about their risk perceptions and vaccine decisions. These conversations may be most productive if they help parents to understand the science behind their children's susceptibility to VPDs and if they express a respect for the rights parents have to make medical decisions for their own children.

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