Attitudes and Perceptions in Parents of South Asian Origin to vaccinate their Children against SARS-CoV-2 infection

by

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Abstract

British Columbia has a low COVID-19 vaccination rate for children in Canada. In addition, the South Asian community has experienced a disproportionate impact from COVID-19, characterized by a high prevalence of the infection that may potentially affect children within this community. This qualitative study aimed to explore the attitudes and perceptions of South Asian parents in British Columbia regarding the vaccination of their children aged 5-12 years against COVID-19. Semi-structured interviews were conducted between March 2023 to June 2023 via teleconferencing. Thematic analysis revealed five major themes: 1) fear 2) post COVID-19 vaccination, 3) vaccination mandate and misperception 4) perceived safety and protection, and 5) vaccine information and communication. The findings of the study highlight the necessity for empowerment and effective public health messaging specifically tailored towards South Asian parents in British Columbia. These also include ensuring timely and ongoing explanations about vaccination benefits and mandates for South Asian parents. These insights may also inform public health strategies on the promotion of COVID-19 vaccination for children within the South Asian community in British Columbia.

Keywords: South Asian; Parents; Attitude; Perception; COVID-19 Vaccine; Children; Interview; Public Health

Land Acknowledgement

My name is Tope Daodu. I am from Nigeria. After earning my bachelor's degree in physiotherapy and obtaining the practicing license, I worked as a physiotherapist for five years. Currently, I am a graduate student at the Department of Biomedical Physiology and Kinesiology at Simon Fraser University, on the unceded territories of the xʷməθkʷəy̓ əm (Musqueam), Skwxwú7mesh (Squamish), kʷikʷəƛ̓əm (Kwikwetlem)and səlilwətaɬ (Tsleil-Waututh) Nations.

Dedication

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Chapter 1. Introduction

1.1. South Asian Community

People of South Asian (SA) origin constitute 20% of the world's global population and represent the largest ethnic minority group in Canada (1). They comprise approximately 5% of the total Canadian population and 25% of the visible minority groups (2, 3). The SA population encompasses individuals from Afghanistan, Bangladesh, Bhutan, India, Maldives, Pakistan, Nepal, and Sri Lanka (2). Presently, around two million SA resides in Canada, with the majority located in Ontario and British Columbia (BC) (4, 5).

Among the visible minority groups in Canada, the SA population will number between 3.2 million and 4.1 million in 2031, compared to 1.3 million in 2006 (6). This projection will make the SA population one of the largest ethics minority populations in Canada. This growth outpaces the general population due to immigration trends (5). According to the reference scenario for these projections, 36% of the Canadian population under 15 years of age in 2031 will belong to the visible minority groups which includes the SA community, in contrast to 18% of persons aged 65 and over (6).

1.2. Disproportionate Impact of COVID-19 on the South Asian Population

In December 2019, an outbreak of pneumonia was reported in Wuhan, China, later identified as a novel coronavirus (7, 7). This virus has since spread globally, causing challenges due to its high contagiousness (7). It was later declared a pandemic on March 11, 2020, by the World Health Organization (W.H.O) (9). Initially known as the novel coronavirus was later renamed as SARS-CoV-2 or COVID-19 by W.H.O (9, 10). The emergence of the COVID-19 disease introduces a new layer of complexity to the SA community.

Based on previous studies in the United Kingdom (UK), the SA community were found to have a 5-10-fold higher risk of SARS-CoV-2 infection and elevated rates of hospitalization (11,12). They were found to have 1.5-2.0-fold higher mortality after SARS-CoV-2 infection when compared to White Canadians (11). They also experienced

worse COVID-19 health outcomes in the UK (13). In Ontario, Canada, a high seroprevalence of SARS-CoV-2 infection was found among the SA population (14). This was revealed during the third wave of the pandemic, indicating a significant prevalence of the infection within this community (14). In BC, SA showed a higher rate of seropositivity for SARS-CoV-2 infection among young adults and children compared to other ethnicities (15). This raised concerns about the distinct challenges faced by the SA community during the COVID-19 pandemic.

The COVID-19 pandemic disproportionately affected those who faced historical and ongoing marginalization (15). The disproportionately affected marginalized communities also includes the SA community. This disproportionate marginalization is evident in conditions related to employment, legal status, housing situations, and other factors affecting access to societal resources (17).

During the pandemic, individuals within the SA community held essential roles, including essential frontline jobs, healthcare positions, emergency responders, and other critical service providers (17). These roles led to exposure to SARS-CoV-2 (14). Cultural practices, such as multi-generational living arrangements and communal gatherings are also exhibited within this community (17). This might have unintentionally contributed to the high level of SARS-CoV-2 transmission within this community (14). Additionally, the prevalence of crowded living conditions within SA households added complexity to effective social distancing measures, which may have facilitated the spread of the virus. Thobani and Butt's also delves into these complexities faced by the SA population in relation to the impact of COVID-19 (18). This study reported the presence of socioeconomic and cultural practice, as factors associated with the presence of the SARS-CoV-2 within this community (18).

These diverse complexities and dynamics within the SA community, which heighten the risk and prevalence of SAR-CoV-2 infection, may also extend to their children. This may impact SA children, leading to potential secondary impacts of COVID-19 on children such as disruptions in education and isolation after SARS-CoV-2 infectivity (19). This may have also resulted in the increased mortality rate among SA children on a global scale in the context of COVID-19 (20, 21).

1.3. COVID-19 Vaccine for Children

COVID-19, caused by the SARS-CoV-2 virus infection, leads to a spectrum of symptoms ranging from mild respiratory issues to severe pneumonia, organ failure, and death (22). Beyond immediate health outcomes, the long-term effects of the infection can also impact individuals, contributing to chronic health issues such as liver, gastrointestinal injuries, and diminished quality of life (23). These might include the symptoms associated with Long COVID- a medical condition defined by the presence of symptoms of COVID-19 occurring at least three months after the initial onset of the infection, lasting for at least two months, and which cannot be explained by any alternative diagnosis. Long COVID can lead to severe health condition and affect long-term functioning in children (23, 24, 25). To address and mitigate the spread of SARS-CoV-2 infection and its impact on health and well-being, the COVID-19 vaccines were developed and approved (26).

Vaccines play a crucial role in preventing and mitigating the impact of infectious diseases by providing a proactive defense against harmful pathogens (27). The primary objective of a vaccine is to stimulate the immune system, enabling it to recognize and fight specific viruses or bacteria (28). By introducing harmless components of the pathogen, vaccines prompt the immune system to produce an immune response, including the generation of antibodies (27).

The vaccines for COVID-19 have demonstrated a high level of efficacy and effectiveness in reducing the severity of the infection (29, 30). Vaccination reduced the overall infection rate from 9.0% to 4.6%, decreased adverse outcomes, ICU hospitalizations, and deaths by 63.5%, proving to be one of the most successful ways to contain the spread of the SARS-CoV-2 virus (29). Initially, the development and deployment of COVID-19 vaccines were prioritized for adults due to their higher susceptibility to severe outcomes from the virus (31). Recognizing the need to expand vaccination efforts to achieve widespread immunity and further control the spread of the infection, subsequent studies were conducted focusing on the pediatric population (32). The outcome from these dedicated investigations resulted in the development and approval of COVID-19 vaccines for the pediatric population (33, 34).

COVID-19 vaccine has been found to be safe, immunogenic, efficacious and effective in children (35, 36). It has also been shown to provide notable physical health benefits for children (37, 38). These health benefits include reducing the risk of infection by 91% and preventing severe illness from the infection (36). COVID-19 vaccination in children also decreases their probability of missing school by reducing their likelihood of acquiring SARS-CoV-2 infection (39). The COVID-19 vaccines for children have not only demonstrated these physical health benefits but also notable indirect advantages, particularly in the realm of mental health and psychological well-being (36) by mitigating the anxiety associated with fear of the SARS-CoV-2 infection (40). Vaccination in children also helps avoid the neuropsychological consequences of quarantine and isolation among the young population (19). Thus, preventing potential negative impacts of the infection on their psychological and mental well-being. Despite these various benefits of the COVID-19 vaccine for children, there have been indications of a low COVID-19 vaccination rate among children (41).

These findings were expressed in a study conducted by Fowlkes et al., where a significant proportion of unvaccinated children were reported to have been infected with SARS-CoV-2 (42). Among them, 66% had infections caused by the Delta variant, a highly transmissible and widely studied variant of the SARS-CoV-2 virus, identified in BC during the week of March 2, 2021 (43). 49% had infections caused by the Omicron variant, another variant of the SARS-CoV-2 virus, identified in BC during November 2021 (44). Hospitalization rates have also been showed to have significantly increased among unvaccinated children when compared to their vaccinated counterparts (45). Additionally, unvaccinated children have been identified as crucial nodes in the transmission of the SARS-CoV-2 (46). Another study also revealed similar hospitalization outcomes, further reporting that out of 397 children hospitalized, 87% were unvaccinated for COVID-19, and 19% of them were admitted to an intensive care unit (ICU) (47).

COVID-19 vaccination is currently recommended for all children aged six months and older by the National Advisory Committee on Immunization in Canada (NACI) (34). In August 2021, NACI advised that children aged 5-11 without contraindications to the Pfizer-BioNTech COVID-19 vaccine could receive a full series, with the second dose administered at least 8 weeks after the first (34).

Considering the potential health risks of unvaccinated children, it becomes imperative to comprehensively understand parental perspective on COVID-19 vaccine acceptance for children.

1.4. Hesitancy towards COVID-19 vaccination among South Asian Children

Vaccine acceptance refers to the willingness of individuals or communities to receive and undergo vaccination (48). It is a crucial aspect of public health efforts, as high vaccine acceptance is essential for achieving herd immunity and controlling the spread of infectious diseases. Vaccine hesitancy, on the other hand conversely, refers to a delay in acceptance or outright refusal of vaccines despite the availability of vaccination services (49). The W.H.O Strategic Advisory Group of Experts shaped the importance of understanding vaccine hesitancy, while providing a comprehensive definition as encompassing both attitudes and behaviours related to vaccination (50). This definition has also guided the development of survey tools to assess the nature and scale of vaccine hesitancy issues (51). In Canada, health professionals and experts define vaccine hesitancy as both an attitude (doubts, concerns) and behaviour (refusing some or many vaccines, delaying vaccination) (52). This recognition and importance of vaccine hesitancy are crucial as the W.H.O lists vaccine hesitancy as one of the top ten threats to global health.

Vaccine hesitancy results from various factors, including doubts, concerns, cultural, religious beliefs, and the interpretation of health and scientific information (53). Vaccine skepticism may sometimes result in lower vaccination coverage, increased vulnerability to vaccine-preventable diseases, and challenges in achieving herd immunity (54). It is a critical barrier to the uptake of vaccines, particularly in the context of COVID-19 (48). Certain sociodemographic groups, including women, younger adults, ethic minority groups, those with lower education, lower income, and those living in rural areas, have been associated with increased hesitancy for COVID-19 vaccination in a global systematic review (55).

1.4.1. Childhood Routine Vaccine and South Asian Community

Childhood vaccination stands as a pillar of public health, safeguarding children from preventable diseases. These routine vaccinations target diseases such as measles, mumps, and rubella (MMR), diphtheria, tetanus, and pertussis (DTaP), as well as poliomyelitis, tuberculosis, and influenza. Despite the global effort, vaccine hesitancy presents a significant hurdle, particularly concerning childhood immunization (56). Measles outbreaks have surged across continents in recent years, with vaccine hesitancy identified as a significant contributing factor (57). The devastating impact of measles outbreaks further underscores the urgency to address vaccine hesitancy coverage globally.

Within the SA countries, the historical trajectory of childhood routine vaccine hesitancy reveals its evolution over time, with vaccine uptake influenced by various factors. These factors include socioeconomic status of parent, distrust in vaccines, and structural and cultural barriers towards vaccination (58). A higher socioeconomic status of SA parent was reported to correlate with increased childhood immunization. Distrust in vaccine effectiveness and cultural barriers have also been reported to hinder childhood immunization uptake within this population. Distrust in government health authorities and the dissemination of misinformation further exacerbates vaccine hesitancy for childhood immunization within this community (58). Whether these same factors hold true for the SA community in Canada is not known.

Despite the presence of existing evidence, the investigation of childhood routine vaccine hesitancy remains an area that requires further exploration. Atteraya et al. highlighted the necessity for such research in their study, where they reported inequalities in childhood immunization rates across Afghanistan, Bangladesh, India, Nepal, and Pakistan (58). Given the historical instances of scientific fraud that have influenced vaccine hesitancy for childhood immunization, accurate scientific information regarding the vaccine is essential. For example, the discredited Wakefield paper falsely linking the MMR vaccine to autism spectrum disorders had a profound impact on parental perceptions of childhood immunization, resulting in a decrease in vaccination rates for measles (58, 59).

1.4.2. Parental Attitudes Toward the COVID-19 Vaccine for Children

COVID-19 vaccination for children has been relatively slow globally (60) with the vaccination rate for children in the US, aged 5–11 years at 39.4%. Parents are generally responsible for making medical decisions on behalf of their children, especially in the case of vaccination, particularly for the younger age group. Within this realm of decision-making lies the act of consenting to vaccination (61). Before the emergence of COVID-19 vaccines for children, numerous studies delved into parents' willingness, attitudes, and acceptance towards the COVID-19 vaccines (61, 62, 63). Rhode et al. conducted a study involving 1381 parents with COVID-19 vaccine hesitancy, finding a vaccine hesitancy rate of 68.8% among parents from ethnic groups typically described as non-white. The study also noted education as a significant predictor for vaccination intentions among parents (62). Recognizing these outcomes among parents, a compelling need arose to investigate the underlying reasons for parental hesitancy towards the COVID-19 vaccine. Numerous studies capitalized on this opportunity, conducting inquiries into vaccine hesitancy from diverse perspectives. These different investigations unveiled a spectrum of factors influencing parental decisions regarding the vaccination of their children.

Parental past experiences with COVID-19 vaccination were reported to be one of the factors influencing COVID-19 vaccination for children. Hammershaimb et al. emphasized this observation in their study on COVID-19 vaccine acceptance among parents in the United States using a nationally representative survey. Positive past experiences among the parents were found to foster trust and contribute to a positive attitude toward COVID-19 vaccination, while negative experiences were reported to breed hesitancy (63). Positive and negative past experiences with COVD-19 vaccinations have also been found to shape parental attitudes and perceptions toward COVID-19 vaccination among ethic minority group (64).

Another factor was frequently observed to influence parents' decision-making towards the COVID-19 vaccine was the emphasis on providing thorough scientific and regulatory oversight in the development and monitoring of the COVID-19 vaccines for children (65). Tan et al. also reported on parent’s consistent need for reassurance, highlighting their strong emphasis on testing and safety assessment of the COVID-19 vaccines (65). This emphasis was also highlighted in an observational study, which

employed an online survey to assess the management of COVID-19 vaccine hesitancy among participants from diverse ethnic backgrounds in the United States (U.S.A) (66). While results from research have provided valuable insights into immediate concerns, the dearth of exploration into the long-term safety of COVID-19 vaccines for children may also present as a significant contributor to parental vaccine hesitancy.

In Quebec, Canada, focus groups were conducted to delve into the perspectives of parents who were hesitant about the COVID-19 vaccine. Among the primary reasons for vaccine refusal were safety concerns and the belief that children do not require vaccination against COVID-19 (67). Many parents also voiced satisfaction with the understanding of "natural" immunity for children while emphasizing the importance of having the autonomy to make decisions regarding their children's COVID-19 vaccination (67).

In BC, COVID-19 vaccine uptake among children has been slow (68). As of July, 6, 2023, BC Centre for Disease Control reported 50% of children aged 5-12 years had received a single dose of the COVID-19 vaccine (68). Also, a recent update from the BC Centre for Disease Control on March 19, 2024, revealed the estimated coverage of the COVID-19 vaccine among children increased by only 20% following a Fall 2023 vaccination campaign (69). It is important to clarify that the Fall 2023 campaign was not specifically targeting children. The vaccination efforts during that period primarily focused on older individuals, although younger individuals were also encouraged to receive vaccination for COVID-19. The coverage reports only reflect the subsequent increase observed among children post-campaign (69).

These statistics highlight the ongoing challenge of COVID-19 vaccine uptake among children in BC. This also emphasizes the necessity for research to understand the reasons behind vaccine hesitancy among parents in BC. This information underscores one of the importance of undertaking this thesis research project and its significance.

1.4.3. COVID-19 Vaccine Hesitancy among the South Asian Community

To understand COVID-19 vaccine hesitancy among children within the SA community, it is crucial to understand the existing attitudes and perceptions of COVID-19 vaccination within this community. As there is little evidence from within Canada, we can look at evidence from SA communities in other countries and in the SA region. SA adults living in the U.S.A and the UK were reported to have a lower vaccination rate for COVID-19 when compared to the white population during the initial phases of the COVID-19 vaccine rollout (70). They were also reported to exhibit hesitancy toward the COVID-19 vaccine. Research has delved into the factors influencing SA decisions regarding COVID-19 vaccination and has reported several significant findings.

Evidence from SA studies have shown social norms and peer influence play a significant role in the attitudes toward COVID-19 vaccination. This was highlighted in India by Prakash et al., where data was collected from 228 millennials- those born between the early 1980s and early 2000s, characterized by their significant presence and distinct social, economic, and cultural traits. Social norms were reported to have both positive and negative impact towards COVID-19 vaccination. Individuals within this community were seen to feel more inclined to pursue COVID-19 vaccination when they observed others within their social circles doing the same (71). This group may share similarities with the SA community in Canada, in terms of experiencing societal pressures related to cultural norms. However, they might differ in terms of additional pressures from multicultural dynamics, economic challenges and the cultural norms are also different.

Additionally, the deeply rooted belief in natural remedies as a preferable alternative to COVID-19 vaccinations in India induced hesitancy toward the COVID-19 vaccine (72). According to the study, parents over 40 and those with close relatives or family members not diagnosed with COVID-19 believed naturopathy or Ayurveda was a better alternative for COVID-19 vaccinations. This demonstrated belief in natural medicine over western medicine, affected decision-making regarding COVID-19 vaccinations. Whether these same cultural beliefs hold true for SA in Canada is not known.

The spread of COVID-19 vaccine misinformation also influenced vaccine hesitancy for COVID-19. According to the W.H.O., misinformation refers to false or inaccurate information that is spread, regardless of whether there is intent to deceive (73). Specifically, misinformation regarding COVID-19 vaccine ingredients, potential side effects, and long-term consequences eroded trust in COVID-19 vaccination (74). Some SA immigrants may have encountered challenges in accessing accurate information about COVID-19 vaccines in their preferred language. This could lead to confusion and COVID-19 vaccine hesitancy due to increase reliance on hearsay (75). Without reliable sources in their preferred language, individuals may rely on word-of-mouth or unofficial sources for information, which can perpetuate misinformation and rumors about COVID-19 vaccines.

Encouragingly, SA in Canada demonstrate a higher uptake of vaccines and greater confidence in COVID-19 immunization when compared with other ethnic population group in Canada (76). Additionally, vaccine receipt among those identifying as SA was observed to surpass that of the white population, although this disparity fails to reach statistical significance at 1.26 (0.97-1.65). However, a notable finding was the significant association between vaccine hesitancy and reduced odds of vaccine receipt, irrespective of race and ethnicity (77). This underscores the critical role of trust in vaccination within the SA community.

Ultimately, when discussing the SA community in the context of COVID-19 vaccination outside and inside of Canada, particularly in the realm of decision-making, literature has shed light, yet there remains a scarcity of studies specifically focusing on SA parents in Canada. To grasp the determinants of vaccine decision-making among SA parents in BC, it is crucial to undertake comprehensive, community-based qualitative research to glean insights into COVID-19 vaccination for SA children.

1.5. Rationale and Study Objective

COVID-19 is highly contagious, and the vaccine for COVID-19 has demonstrated high effectiveness and efficacy in reducing both the spread and severity of infection in children. The SA community has faced a disproportionate impact from COVID-19, with a high prevalence of SARS-CoV-2 infection noted within this community. This may also affect the children within this community.

COVID-19 vaccination rates among children in BC remain low. The SA community constitutes the most significant visible minority in BC. Therefore, exploring SA parental attitudes about COVID-19 vaccination for their children becomes imperative.

Another significant aspect of exploring the attitudes and perceptions of COVID-19 child vaccination among SA parents in BC also lies in its potential impact on public health. By gaining insights into the factors influencing COVID-19 vaccine acceptance and hesitancy among SA parents, public health efforts can be better informed on effective strategies towards promoting COVID-19 vaccination for children within the SA community in BC. Understanding these dynamics within the SA population in BC is also crucial for contributing to the investigation of the general factors contributing to the low vaccination rate among children in BC.

Therefore, the objective of this research was to explore the attitudes and perceptions of SA parents in BC regarding the vaccination of children aged 5-12 years against SARS-CoV-2. The goal was to obtain a comprehensive understanding of COVID-19 vaccine hesitancy for parents within this community. The emphasis on this age group of children was solely due to the timing of when the study was initially designed [April/2022] and the vaccine recommendation for children at that time.

1.6. Researcher's positionality

The importance of acknowledging one's position within their work cannot be overstated, as it has an impact on the study's validity (78). I am a black, female, parent with a seven-year-old child, English speaker, and an immigrant from Nigeria. Despite my limited experience with the Canadian public health care system, my personal background and experiences as an individual who has not received the COVID-19 vaccine, a parent and an immigrant provide valuable insights into understanding the perception surrounding COVID-19 vaccination for children within the SA community in BC.

My position as an outsider to the community may have also reduced potential biases that could arise from an insider perspective. Nevertheless, there is the possibility of biases occurring, including the possibility of overlooking or misunderstanding certain data or cultural references. Findings from the study may be influenced by preconceived

notions, which I addressed through reflexive practices. This may have also diminished the depth and comprehensiveness of the analysis. These reflexive practices primarily involved self-awareness, wherein I recognized my own background, experiences, values, that could influence the analysis and interpretation of the study findings. Maintaining reflexivity through journaling was also conducted throughout the study. Pilot testing the interview guide with a SA research assistant also helped identify and address any potential biases in the interview questions and data collection. I also debriefed with a peer colleague, challenging my viewpoints, refining the study outcome and reducing bias.

To ensure the relevance and utility of this work to the SA community, I have approached my research with the utmost care based on my experience working with different communities in the past. My empathy and understanding as a parent and immigrant also foster a deeper connection with participants and enhance the trustworthiness of the research. However, the proximity of my position to the participants might have also impact effectiveness during the data collection process of this research project. This awareness was mitigated through effective communication through out the study. This was guided with sensitivity and an openness to diverse perspectives. Effective communication during the data collection phase also helped minimize any power imbalances between me and the study participants.

1.7. Thesis Outline

This thesis aimed to understand the attitudes and perceptions of SA parents regarding the COVID-19 vaccine for their children in BC. This thesis study employed a qualitative descriptive research methodology, utilizing semi-structured interviews with SA parents in BC.

Following this introductory chapter, which has effectively set the stage by outlining the purpose of the study and the significance of exploring SA parents' perspectives on COVID-19 vaccination for their children is Chapter 2 (Methods). Chapter 2 provides a comprehensive overview of the research methodology employed within the study, the recruitment of participants, data collection process (semi-structured interviews), and data analysis. Next, in Chapter 3 (Results), where the findings of the study are presented and organized according to the themes identified from the data.

Chapter 4 (discussion), where the implication of the study's findings from Chapter 3 were interpreted and implied. Lastly, Chapter 5 (Conclusion), summarizes the thesis and highlighting the main findings, notable strength, and limitation of the study, while providing recommendations for future research. This chapter also offered closing thought on the thesis significance.

Chapter 2. Methods

Given the exploratory nature of this thesis objective, which aims to understand the attitudes and perceptions of SA parents in BC regarding vaccinating their children aged 5-12 years against SARS-CoV-2, a qualitative research method was employed. This research method is highly suitable for capturing and exploring different perspectives on a particular phenomenon (79, 80). Specifically, a qualitative descriptive methodological approach was utilized to explore the objective of this thesis project. The qualitative descriptive research methodology offers flexibility with no commitment to a theory or framework when designing and conducting a qualitative study (81, 82). This type of qualitative approach is often utilized when providing a comprehensive and detailed description of a phenomenon (82). This qualitative approach is also often adopted as an effective approach to subject areas where little or no information is available about the subject (83, 84).

The qualitative descriptive methodology also does not adhere to a pre-existing set of rules generated from a philosophical or epistemological stance (85). Furthermore, the qualitative descriptive approach is particularly useful in exploring sensitive topics and phenomena, describing real-world experiences, behaviors, or situations (86). A qualitative descriptive study also involves data collection utilizing individual interviews with semi-structured interview guide (Appendix A). For this thesis project, semi-structured interviews were conducted between March 2023 to June 2023. Therefore, this qualitative methodology approach was employed in carrying out this research project.

2.1. Participant Recruitment and Sampling

Participants were selected from the ongoing COVID CommUNITY study. The COVID CommUNITY study is an observational prospective cohort study investigating COVID-19 vaccine hesitancy, vaccine access, immunogenicity, vaccine effectiveness, and safety among SA population in Canada (87). This study is being conducted in the provinces of Ontario and BC. The COVID CommUNITY study involves up to 2040 self-identified SA individuals (aged 18 and above) followed for 6 to 12 months consecutively.

Participants in the ongoing COVID CommUNITY from BC were recruited from April 2022 until December 2023 as follows: 1) by re-contacting participants in other ongoing established prospective cohort studies, 2) de novo recruitment from vaccine centers in the Greater Vancouver Area (GVA), and 3) from places of worship such as temples, gurdwaras, and mosques, with permission obtained from the religious head/president, community centers, and agencies. This resulted in a total of 2,339 SA participants from BC for this observational prospective cohort study including a cohort of SA parents, children, and youth (87). Detailed information about the participants were collected, encompassing their demographic information and their past experiences with SARS-CoV-2 exposures and its effects on their daily lives. Additionally, participants provided consent to be contacted for future studies.

Table 1 shows the sociodemographic information of the 2339 participant from BC COVID CommUNITY study database from which eligible SA parent were recruited for this study. The COVID CommUNITY study served as the recruitment source for this thesis project as it shared a demographic profile similar to that of the expected participants of interest for this qualitative research. These were namely SA parents. This demographic overlap also enabled this thesis research project to maximize feasibility within the given stipulated timeline by the utilising existing data for a more directed recruitment approach.

Recruitment for this qualitative thesis study was carried out through this BC COVID CommUNITY study. Specifically, participants were the SA parents of the children & youth cohorts. Based on those who had consented to be contacted for enrollment in future studies and were SA parents living in BC, a total of 124 eligible SA parents were identified from the BC COVID CommUNITY study. All potential parent participants were immigrants to Canada.

Table 1. Demographics characteristics table of the SA parent as observed among the 2339 participant in BC- COVID CommUNITY study

Demographic	COVID CommUNITY Study (n=124)
Age of the parent or guardian	Range 25 - 60 years, mean age 42.5
Age of the children	1-20 years
Sex of the parent/guardian	Male: 24%, Female: 76%
Ethnicity	SA
Marital Status	Single (51%), Married (49%)
Parent/guardian COVID-19 vaccination status	Vaccinated (85%), unvaccinated (3%), Prefer not to answer (12%)
Children COVID-19 vaccination status	Vaccinated (62%), unvaccinated (31%), Prefer not to answer (7%)
Parent's Education	High school graduate (30%), vocational school, or apprenticeship training (5%), non-university certificate or diploma from a community college, CEFEP (7%), University bachelor's degree (39%), University graduate degree (master's or doctorate) (19%).
Employment status	Employed (64%), Unemployed (36%).
Country of birth	India (79%), Pakistan (6%), Sri Lanka (2%), Nepal (2%), Bangladesh (11%), Afghanistan (0%), Bhutan (0%), Maldives (0%)
Language preference	Punjabi (22%), English (66%), Hindi (9%), Bengali (1%), Urdu (1%), Tamil (0.5%), Gujarati (0.5%),
Duration of residence in Canada	< 5 years (55%), 5-10 years (37%), > 10 years (8%)

SA parents from the COVID Community study were pre-screened for eligibility using specific criteria to determine eligibility and sampling for recruitment into this thesis qualitative research study. Purposeful sampling approach was also employed in the study, primarily based on the vaccination status of the potential participant's children. Purposeful sampling, a non-random technique, involves choosing participants based on specific characteristics or criteria relevant to the research question (79). This screening process helped identify suitable participants for this qualitative study. These generally included:

1. COVID-19 vaccination status of SA parent/guardian
2. COVID-19 vaccination status of children
3. Sex of the parent/guardian
4. Age of the children; SA parents with children aged 5-12 years.

A total of 63 potential participants were identified based on the above screening criteria, and their data extracted from the COVID CommUNITY study, including their contact details. Subsequently, these SA parents were invited to participate in this qualitative study through email contact. They were also provided with the study details and consent form (Appendix B). A follow-up call was also conducted after one week in cases of no response. Once eligible SA parents confirmed their willingness to take part in the study, they were further screened for other inclusion criteria, as follows:

1. Language preference (English): Participant should be able to speak and understand English.
2. Requirements for Interview Participation: Participant should have access to a device capable of making video calls on a Zoom App, such as a mobile phone or computer with an internet connection.
3. Household Selection Criteria: Participant should belong to a different family or household (i.e., only one parent per family and not both parents).

The process of obtaining informed consent then was carried out with eligible participants who met all the inclusion criteria and agreed to be interviewed. This process involved a thorough explanation of the study's purpose, procedures, and rights to the study's participant (79). Informed consent was obtained from each study participant, both in written and verbal. Once participants provided their informed consent to participate voluntarily, the scheduling of interview dates, times, and Zoom details were arranged. This was done at a mutually convenient time slot for an estimated 45-60 minutes.

Unvaccinated (UV) refers to children who have not received any vaccinations for COVID-19. Partially vaccinated (PV) refers to children who have received a single dose of the COVID-19 vaccine. The vaccination process was initialized but not complete. Fully vaccinated (V), on the other hand, refers to children that have received all the recommended doses of the COVID-19 vaccinations. This includes completing the two initial doses of the vaccine as well as potentially receiving a booster dose.

2.2. Ethics

The study received approval from the University of British Columbia Behavioural Research Ethics Board and the Department of Research Ethics at Simon Fraser University (H22-02404), with the final confirmation of approval from the Providence Health Care Research Institute on February 8th, 2023. The study adheres to the principles outlined in the Declaration of Helsinki (88).

Consent was obtained from participants before undergoing any procedures in the study. This process of informed consent was conducted both in written and verbal. Each participant received a copy of the consent forms for their personal record. There was no significant language barrier during the informed consent process. Additionally, clarity was ensured and provided when necessary to address any potential challenges while fostering effective communication during the informed consent process.

Participant's personal information was de-identified, and each study participant were assigned an identification to ensure confidentiality. All participant forms and personal data provided by participants were entered into a confidential and secured database. Only the research team members involved in the study had access to these study records, maintaining the privacy and data security of the participants.

2.3. Interviews

A semi-structured interview guide was employed in this qualitative study. This allowed participants to openly share their thoughts and experiences, utilizing open-ended questions format (80). The semi-structured interview guide was designed to explore the study objective (Appendix A). This interview guide was scripted with a set of main questions followed by corresponding follow-up questions. These questions were consistently applied and asked to all participants in the same sequence. This process enabled a more organic process to occur during each interview session. This interview topic guide was developed with questions that avoid inducing anxiety, confrontation, interrogation, or leading the participant (79).

Prior to conducting the interviews, the discussion guide underwent pilot testing. This testing was conducted in collaboration with a research assistant who has a SA background. The purpose of this testing was to identify any ambiguities or confusion in the questions, assess the timeframe, and evaluate the flow and sequencing of the questions. This meticulous process was crucial for ensuring the collection of high-quality and meaningful data.

One-on-one interviews were conducted over Zoom from March 2023 to June 2023. These interview sessions were audio recorded on Zoom. Each interview session lasted between 25 to 40 minutes in total and participants were compensated for their time with a $25 gift card. During the interview session, participant information such as their role in the family (mother, father, or guardian of the child), current marital status, current vaccination status, current vaccination status of the children, number of children in the family, and the current age of their children were obtained.

After the completion of each interview session, the interview audio recording files were diligently transferred to the approved data storage platform, SFU OneDrive, from the Zoom App. Subsequently, these audio recordings underwent verbatim transcription and de-identification to eliminate any identifying information, resulting in word document interview transcripts. This process was done with the assistance of a transcriptionist. These interview transcripts were then utilized for thorough data analysis. Data analysis was performed using the qualitative data analysis package NVivo and its coding technique.

To provide additional context:

> at the time of data collection, all prevailing public health measures to combat COVID-19, including mask restrictions, had already been lifted and pandemic was declared over (89).

2.4. Data analysis

Thematic analysis was the data analytic approach employed in this study. This is a valuable analytic method for understanding people's perspectives, ideas, knowledge, experiences, or beliefs surrounding a specific subject area. The thematic analysis recognizes recurrent themes in a data that help address the research question (90). A theme is a motif that "captures something important about the dataset to address the

research question and represents some level of patterned response" (79). The de-identified interview transcripts were analyzed specifically using inductive thematic analysis. The decision to utilize inductive thematic analysis was strongly influenced by the nature and focus of the research objectives and the qualitative descriptive approach employed in this study. This analytic approach emphasizes the absence of pre-existing categories or theories, allowing themes to emerge directly from the data.

Inductive thematic analysis, as the sole qualitative data analysis method employed in this study. Inductive thematic analysis was conducted in six steps, as outlined by Braun and Clarke: familiarizing the data, initial coding, searching, and generating themes, reviewing themes, defining and naming themes, and systematically writing the report (90).

Data familiarization involved listening to the audio recording while reading through the interview transcripts. These transcripts were read and re-read to gain an overall sense data. The initial coding process was then carried out. This process involved going through the data or participant statements line by line and attaching codes based on emerging patterns. Excerpts from each code were re-read, and themes were generated by organizing the initial codes based on data similarities and patterns (90). Final themes were then developed and reviewed based on the understanding and clustering of individual codes, examining what each represents with guidance on how it relates to the study objective. These themes were carefully reviewed to capture distinctive features that align with the overall research objective. And lastly, naming and defining the themes involves choosing descriptive and meaningful labels that succinctly summarize the content of each theme.

The achievement of saturation was primarily focused on data analysis, which was determined by continuously reviewing and coding data until no new themes, concepts, or information emerge from the data. Employing this analytic approach provided a robust and credible foundation for the findings in this thesis, allowing for the tracing of experiences and thoughts commonly shared by the study participants (79). This research process was meticulously documented to maintain an audit trail.

To enhance validation and reliability in coding strategies and data analysis, the interview transcripts were independently reviewed by a second coder. The second coder

is a female, English speaker, and a white Canadian. Having a second coder ensured that identified themes and descriptive quotes accurately reflected the experiences of the study participant. The second coder was an experienced qualitative researcher, proficient in qualitative analysis and possessing substantial expertise in health-related research. This researcher underwent the same data analysis process, contributing to the study's credibility, dependability, and transferability (80).

The final identified themes underwent a thorough review and refinement, with any disagreements between the second coders and myself, resolved through deliberation in a peer debriefing process (91). This peer debriefing process involved revisiting the data closely to examine the emerged themes and ensure different perspectives on the interpretation of the data and perception of the themes were considered (92). Further discussions revolving around the emerging theme were also filtered through consultations with members of the supervisory committee for this thesis project. This comprehensive approach further strengthens the robustness and trustworthiness of the study findings. This process also helped navigate bias and strengthen the reflective process that occurred throughout the study. The final report obtained were then discussed as findings to address the objective of the study.

From designing the interview guide and conducting pilot testing with a research assistant, to obtaining ethical approval, pre-screening, and identifying the 63 participants, recruiting participant and follow up, obtaining informed consent, conducting virtual interviews, analyzing the data and interpreting it with a second coder, and writing the final report—all steps were conducted by the graduate student. The study was reported using the Standards for Reporting Qualitative Research (SRQR) (93). SRQR guided the systematic and transparent presentation of the study procedure, the report and facilitating a comprehensive understanding of the qualitative research process and findings.

Chapter 3. Results

3.1. Demographic information

Semi-structured interviews were conducted with eight study participants, including 2 (Male) and 6 (Female), with interview durations averaging 25 to 40 minutes. The participant demographics characteristics are outlined in Table 2 and further detailed in Appendix C. The demographics of the study participant includes details with regards to their marital status with number of children. All participants were fully vaccinated against COVID-19. The participant pool also encompasses SA parent with unvaccinated, partially vaccinated, or fully vaccinated children.

Table 2. Demographic distribution of the South Asian parent

Characteristics		No of SA-parents (n=8)
Parent Sex	Male	6 (75%)
	Female	2 (25%)
Parent Vaccination status	Vaccinated	8(100%)
Marital status	Married	7(87.5%)
	Single	1 (12.5%)
Children's Vaccination status	Unvaccinated (UV)	2 (25%)
	Partially vaccinated (Single dose) (PV)	1(12.5%)
	Fully Vaccinated (V)	5 (62.5%)
Number of children	One	1(12.5%)
	Two	6(50%)
	Three	1(12.5%)
Child's age (years)	5–11	14
	≥ 12	2

Unvaccinated (UV)=Their children haven't received any dose of the COVID-19 vaccine, partially vaccinated (PV)=Their children only receive a single dose of COVID-19 vaccine, fully vaccinated(V)= Their children have received two or more doses of COVID-19 vaccines

Five key themes resulted from the data analysis, and these include: 1) fear 2) post COVID-19 vaccination, 3) vaccination mandate and misperception 4) perceived safety and protection, and 5) vaccine information and communication. Table 3 illustrated these identified themes along with corresponding sample quotes.

Table 3. Inductive thematic data analysis

Themes	Excerpt from interview transcript (quotation)
Fear – *Apprehension triggered by concern surrounding the COVID-19 vaccine for children*	*"To be honest, I am hesitant about getting my child vaccinated because I am afraid that it might lead to issues in the future."*
Post COVID-19 Vaccination- *Hesitancy stemmed from personal experiences and outcome in children after receiving the vaccine.*	*"So, because I had cold, and my husband, he never had allergies to anything, he also started having allergies to dust, seasonal allergies, after the COVID-19 vaccine. So, we do not want that to happen to our kids."*
Vaccination mandate and misperception – *Adhering to the requirement of getting vaccinated, particularly for travel purposes and misconceptions about vaccinating children as a requirement.*	*"Especially when we [children included] are traveling internationally, that was the condition at that time. So, with the whole family and the kids, we got the vaccine because it was mandated, not just that, but crossing the border, even crossing the border to U.S.A, it was necessary, so we had it, we do not want to leave a child behind, and rest of the family can travel."*
Perceived Safety and Protection- *subjective thought on protection the vaccine offers against the disease.*	*"So, we also went for that and received a booster, ensuring that we, along with our children, can attain maximum protection, protection against the disease [COVID-19] and germs."*
Vaccine information and Communication - *parents' informational needs, the availability, trustworthiness, and accessibility of COVID-19 vaccine information for children.*	*"Yeah, because even with the studies, I am not so sure, you know, the vaccine studies, I do not, to be honest, I do not trust them."*

3.2. Fear

This theme identified fear of COVID-19 vaccination for children as a notable concern, significantly shaping the perspectives of the study participants regarding the acceptability of COVID-19 vaccines for their children. Despite the high vaccination rates among the SA parents in the study, all study participants expressed concern and uncertainty regarding the COVID-19 vaccine for children. These concerns revolved around apprehensions regarding the potential long-term effects of the vaccine and its health implications, worries about possible vaccine side effects, and fear stemming from rumors:

"To be honest, I am hesitant about getting my child vaccinated because I am afraid that it might lead to some trouble in the future." (Interview1)[1]

"There are, of course, some children around the world and they [parents] are scared, as we are not sure what, on a long-term basis, the impact of this vaccine [COVID-19]." (Interview6)[2]

One of the participants with unvaccinated children also articulated these concerns in relation to the potential side effects of the COVID-19 vaccine, despite recognizing the protective nature of the vaccine:

"I was worried about the side effects for kids, so that is why I did not, as I know it should protect, but sometimes I doubt and that it is, and I am scared that it might affect them [children] in the future." (Interview2)[3]

Participants further acknowledged the protective nature of the vaccine but reflect a lingering uncertainty and fear regarding the potential consequences for their children:

"I was scared to get them vaccinated. I understand it is for the safe side, but still, I heard about kids experiencing problems after receiving the vaccine [COVID-19 vaccine]." (Interview8)[4]

"It protects and has protected us [parents] from getting COVID-19 because people had it. This is for a good cause, but we do not know, right, what would happen to our kids." (Interview2)

"You love your kid and want to ensure that he or she is a healthy, happy boy or girl. You start finding the best things, but then it is scary when it comes to the vaccine [COVID-19 vaccine]." (Interview8)

In addition, participants who had their children vaccinated also expressed concern and fear evolving from rumors and misinformation about the COVID-19 vaccine, alongside their understanding of the vaccine:

"Sometimes I am confused and scared, some people did not get the vaccine [COVID-19 vaccine]. I understand much better, but I am

[1] *Interview1: Female participant with two children (un- vaccinated)*

[2] *Interview6: Male participant with two children (fully vaccinated)*

[3] *Interview2: Female participant with two children (un- vaccinated)*

[4] *Interview8: Female participant with two children (fully vaccinated)*

hearing that the vaccine [COVID-19 vaccine] is not good for children." (Interview5)[5]

"I do not know, I said if everybody is doing it, why should we [children] not get the vaccine [COVID-19 vaccine], but there are so many rumors, and we had much feared because of these rumors." (Interview3)[6]

Despite this perceived notion on the protective feature of the COVID-19 vaccine, one of our participants who had their children vaccinated highlights their thought of initially detailing the vaccination process, ensuring its safety and efficacy:

"We [parents] initially waited like everybody, waited before getting their kids vaccinated, waiting until other children had received the vaccine first, to see if it is safe." (Interview3)

3.3. Post COVID-19 Vaccination

This theme focused on the personal health experiences of SA parents following their COVID-19 vaccination which shaped their attitudes toward vaccinating their children for COVID-19. Participants conveyed these different experiences in terms of various medical conditions they experienced post COVID-19 vaccination that they attributed to vaccination. These symptoms included headaches, feeling lethargic, new seasonal allergies, far-sightedness, shortness of breath and heart disease. Participants with unvaccinated children, expressed hesitancy towards COVID-19 vaccination for their children, due to their own health symptoms that they believe occurred after they were vaccinated and they attributed to being caused by the COVID vaccine:

"I personally will never let them go for the vaccine [COVID-19]. That is my opinion, me and my husband, did not have any issues with the heart. After taking the vaccine [COVID-19 vaccine], I started having shortness of breath and he started having heart issues, as well as arm pain and can't use the left arm." (Interview1)[7]

"My husband and I are both affected, after getting the vaccine [COVID-19 vaccine], too much effect on our eyesight. My eyesight, I cannot see my phone. I cannot see close, you know, it affected my eyes, then I

[5] *Interview5: Male Participant with two children (fully vaccinated)*

[6] *Interview3: Female participant with three children (all partially vaccinated)*

[7] *Interview1: Female participant with two children (un- vaccinated)*

decided that I should not have the vaccine [COVID-19 vaccine] for my kids." (Interview2)[8]

"I feel like sometimes I get headaches often. I never had them before the vaccine [COVID-19 vaccine]. Yeah, and sometimes I feel like my body energy is low. Or maybe, how should I say it, lazy or like, not as energetic as before, these things are happening." (Interview3)[9]

"So, because I had cold, and my husband, he never had allergies to anything, he also started having allergies to dust, seasonal allergies, after the vaccine [COVID-19 vaccine]. So, we do not want that to happen to our kids, because one [the child] is already immune compromised I don't want." (Interview2)

While there is no scientific evidence of widespread long term side effects of COVID-19 vaccines, these personal experiences and perceptions shaped parental attitudes towards vaccinating their children (35).

3.4. Vaccination mandates and misperception

This theme recognized the role of COVID-19 vaccination mandate and policies for international travel had in shaping the perception and attitudes towards COVID-19 vaccination for SA children among the study participant. Because the participants were all immigrants with family outside of Canada many needed to travel internationally to see their family. Therefore, participants expressed the need to have their children vaccinated in order to meet international travel requirement and follow government policies and directives. This reflects a proactive approach taken by most participants to meet travel requirements, despite the fact that most countries did not require children to be vaccinated to travel:

"We [children included] were flying to India, that is why, we needed to be vaccinated, that is why we got the vaccine." (Interview4)[10]

"Especially when we [children included] are traveling internationally, that was the condition at that time. So, with the whole family and the kids, we got the vaccine because it was mandated, not just that, but crossing the border, even crossing the border to U.S.A, it was necessary, so we had it, we do not want to leave a child behind, and rest of the family can travel, one kid at a very young age could not stay at home,

[8] *Interview2: Female participant with two children (un- vaccinated)*

[9] *Interview3: Female participant with three children (all partially vaccinated)*

[10] *Interview4: Female participant with two children (fully vaccinated)*

so we had it complete for all the kids and the whole family." (Interview6)[11]

Participant also expressed a positive outlook on the travel requirements and vaccine mandates, as they saw the vaccine policies from the government as a protective measure, instilling trust in their actions while influencing on their individuals' choices regarding COVID-19 vaccination:

"My husband and I thought if the government brought things, it is to protect us, and it is beneficial. However, let us see what happens in the future, so far now, it is good. Moreover, yeah, we trust in the government and all. If the government is doing something, it is good." (Interview5)[12]

Many participants misunderstood the BC vaccine mandates that were in place for adults during the pandemic (such as the requirement to be vaccinated to enter a restaurant) and erroneously thought this mandate applied to children. They perceived this mandate as compulsory, even though the measures were not mandated for children:

"Nothing, because the government said to do it, and the doctor said to do it that, it needs to be done, some parents will go with whatever they feel but then we [children included] followed through; otherwise, we wouldn't." (Interview8)[13]

"Because first of all, without the vaccine, it is mandatory, kind of mandatory because, you know, so that is why I thought to get the vaccine for the kids." (Interview8)

"For me, it is like you, if you want to have an easy life here, then you have to follow the rules [mandate]. And then there is nothing more you can do especially with vaccine." (Interview7)[14]

This misperception about vaccine mandates led many parents to seek vaccination for their children.

[11] *Interview6: Male participant with two children (fully vaccinated)*

[12] *Interview5: Male Participant with two children (fully vaccinated)*

[13] *Interview8: Female participant with two children (fully vaccinated)*

[14] *Interview7: Female participant, single parent of one child (fully vaccinated)*

3.5. Perceived Safety and Protection

This theme was constructed based on participant perceptions of the SARS-CoV-2 vaccines for their children, highlighting vaccination as a means to feel safe and protected against COVID-19. The concept of protection through vaccination emerged as a common trend among those who had their children vaccinated and those who did not. Participants expressed their belief that the COVID-19 vaccine, including the boosters, strengthens the immune system and offers maximum protection encouraging vaccine uptake among those that had their children vaccinated:

> *"Because when we received the vaccine, we [children included] felt safe and protected, and the immune system was strengthened." (Interview5)*[15]

> *"So, we also went for that and received a booster, ensuring that we, along with our children, can attain maximum protection, protection against the disease [COVID-19] and germs." (Interview6)*[16]

Furthermore, participants also expressed that the vaccine was a preferable means for their children to feel protected from COVID-19 compared to other preventive measures such as wearing masks. Some noted improvements in their children's health post-vaccination:

> *"And the second thing is masks, it is like, it is not a good thing, so that is why we prefer getting the vaccine instead of having our children wear masks, like, vaccination is better than mask for protection, in our view, so I thought, Okay, if vaccinated, then they don't need to wear masks." (Interview8)*[17]

> *"My son, now I feel he is better than before after receiving the vaccine [COVID-19 vaccine]." (Interview4)*[18]

> *"Protection for a longer time and then the body mechanism, the development of antibody to fight against the virus. So, it allows you to save your time, money, enabling you to focus on other aspects of life." (Interview7)* [19]

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[15] *Interview5: Male Participant with two children (fully vaccinated)*

[16] *Interview6: Male participant with two children (fully vaccinated)*

[17] *Interview8: Female participant with two children (fully vaccinated)*

[18] *Interview4: Female participant with two children (fully vaccinated)*

[19] *Interview7: Female participant, single parent of one child (fully vaccinated)*

Participants with unvaccinated children also shared this perception of protection, viewing vaccination as a response to escalating challenges and as a protective measure when faced with worsening situations:

> *"If something gets worse, something like COVID, it gets worse, people need to get their kids vaccinated to protect, like if nothing is working out, then I might think of getting them [children] vaccinated." (Interview2)*[20]

3.6. Vaccine information and communication

Participant discussion also highlighted the information-seeking behaviours among SA parents. The theme reflects the expressed need for comprehensive and culturally sensitive communication strategies and communication preferences of SA parents. Participants whose children were not vaccinated expressed the need for transparency and detailed information regarding COVID-19 vaccines for children:

> *"It should be shown what the cases are, the safety, the success rate is, and the side effects. More information, yeah, because with the vaccine, we don't know what is happening." (Interview2)*

Participant who had their children vaccinated also emphasized the need for detailed information on side effect of the vaccine. They also spoke about demonstrating the health benefits of the COVID-19 vaccine. They believe that such knowledge may instill confidence in vaccination for children:

> *"Like as much information as we can get about the vaccine, particularly about the side effects of the vaccine [COVID-19 vaccine] for kids." (Interview5)*[21]

> *"Maybe by providing them [other SA parents] with more information on the health benefits and how the vaccine works, including its entire life cycle structure, maybe, this will make more confidence in other parents. Explaining how it fights and protects against the germs, it may provide them the confident they need to consider getting it for their children as well." (Interview6)*[22]

[20] *Interview2: Female participant with two children (un-vaccinated)*

[21] *Interview5: Male Participant with two children (fully vaccinated)*

[22] *Interview6: Male participant with two children (fully vaccinated)*

One of the participants also suggested using research information particularly statistical data to counter misinformation spread on social media. Utilizing various communication channels, including social media platforms, can improve COVID-19 vaccine communication effectiveness. By providing real and accurate data about the well-being of vaccinated children of the same age group, they believed it could positively influence other SA parents' viewpoint towards vaccination:

> *"Some, like, providing some statistics about how children of the same age that have been vaccinated are currently faring, there is so much stuff on social media, you know because, but if you guys have the real stuff there, it might help other people [other SA parent]." (Interview8)*[23]

Participants further suggest a strong reliance on family doctors, indicating that people generally trust and believe in the guidance provided by their family healthcare professionals. Yet another participant remarked that others may place greater emphasis on their own instincts or emotions when deciding about COVID-19 vaccination for their children:

> *"I think you guys need to ask the family doctor. Most people go to see the doctor, the family doctor and what the doctor advises, they tend to follow and believe." (Interview4)*[24]

> *"It all depends on because some parents will follow whatever the doctor says, while others will go with whatever they feel." (Interview7)*[25]

While our participants were proficient in English, they expressed a desire for COVID-19 vaccine information for children to be presented in their preferred language (most often Punjabi or Hindi). They further express a strong preference for accessing data and information in languages they are comfortable with, as it facilitates better understanding and knowledge about vaccinations:

> *"To get the information, that would be good, in the local languages." (Interview1)*[26]

> *"Yeah, I think they should have that information in all the languages, like you know, Punjabi, and other language. Some people cannot speak English, so having the information in their language would make it easier*

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[23] *Interview8: Female participant with two children (fully vaccinated)*

[24] *Interview4: Female participant with two children (fully vaccinated)*

[25] *Interview7: Female participant, single parent of one child (fully vaccinated)*

[26] *Interview1: Female participant with two children (un- vaccinated)*

for them to read and understand, gaining knowledge about the vaccine." (Interview5)[27]

This language preference was also attributed to a deeper emotional connection and a sense of comfort when receiving vaccine relatable information in one's native language:

"I read somewhere that if when expressing something sincerely, it can only be done in your native language, from the bottom of your heart. Now I am speaking English, but you know what, if I am saying something, from the bottom of my heart, I think, I will say it in my language." (Interview8)[28]

[27] *Interview5: Male Participant with two children (fully vaccinated*

[28] *Interview8: Female participant with two children (fully vaccinated)*

Chapter 4. Discussion

In this qualitative descriptive research study, the primary objective was to explore the attitudes and perceptions of SA parents in BC regarding COVID-19 vaccination of children aged 5-12 years. The identified themes span a spectrum of factors shaping vaccination decision-making, ranging from the fear of vaccine side effects preventing uptake of the vaccine for their children, to recognition of vaccine safety and the protection the vaccine provides. A desire for international travel and a misperception of the vaccine mandate also led to vaccine acceptance. Hesitancy towards COVID-19 vaccination for SA children was based on SA parent's potentially erroneously attributing personal health outcomes following COVID-19 vaccination to the vaccine and they expressed preferences for COVID-19 vaccine related information in their preferred language.

Fears and apprehension related to both COVID-19, and the vaccine were expressed by study participants in this qualitative research. Fear of the COVID-19 vaccine stemmed from various sources, such as fear of possible long-term effects after COVID-19 vaccination for their children, fear due to rumour and misinformation and uncertainties surrounding the future impact of the COVID-19 vaccine. This influenced their attitudes and perceptions toward vaccinating their children for COVID-19 across the spectrum of vaccination statuses among all parent groups.

SA parents' perceived health experiences with the COVID-19 vaccination also influenced their attitude and perception towards the COVID-19 vaccine for their children. Personal experiences became a significant factor in shaping attitudes surrounding the COVID-19 vaccine for SA children. Perceived negative health outcomes or perceived side effects experienced by SA parents influenced their perception of the vaccine's safety and contributed to their hesitancy towards vaccinating their children for COVID-19.

The perceived safety and protection provided by COVID-19 vaccination for children and the misperception of COVID-19 vaccine mandates and policies for children was also identified as influential factor toward COVID-19 vaccination. The misperception that the vaccine mandate was required for children, and vaccination requirements for international travel were reasons some parents vaccinated their children. These different

factors helped shaped SA parental decisions with COVID-19 vaccination for their children.

Despite being drawn from a small pool of participants, these themes contributed meaningfully to the understanding of the research objective. The complexity and interconnection of these themes also provided a comprehensive understanding of the factors at play in SA parent decision-making process about the COVID-19 vaccine for their children. SA parents' heightened fears about vaccinating their children stem from negative perceived personal health outcomes post-vaccination, which undermine the perceived safety and protection of vaccines. Conversely, vaccine information can build trust and perception of the vaccination mandates, ultimately fostering a supportive attitude towards vaccinating SA children

4.1. Effective Public Health Messaging: Tackling Concerns surrounding COVID-19 Vaccination for South Asian Children

A spectrum of concerns was identified among the study participants in this qualitative research. Some of these concerns revolved around apprehension regarding the potential long-term effects of the COVID-19 vaccine for children. The importance of conducting research to monitor the long-term safety of COVID-19 vaccination in children has been recommended by studies (25). Liu et al. conducted a study revealing concerns about the perceived long-term side safety of the COVID-19 vaccine for children (94). However, recent research findings highlight the efficacy and safety of COVID-19 mRNA vaccines in children, particularly those aged 5 to 11 years, in preventing infection and severe COVID-19-related illnesses. (36, 38).

SA parents' concerns about their children possibly suffering from adverse effects such as myocarditis and pericarditis following COVID-19 vaccination impacted their attitude towards vaccination (95). These concerns were similarly mentioned by the study participant in this qualitative study using the terms "heart issues”, which was not the case before receiving the COVID-19 vaccine. This fluctuating concern also applies to the hesitancy observed at the outset of COVID-19 vaccination. As one participant mentioned, they opted to postpone vaccinations initially for their children to assess it safety by observing other children. This finding aligns with a nationwide study conducted in U.S.A, revealing that some parents prefer to adopt a "wait and see" approach

regarding COVID-19 vaccines for their children. This is seen as planning to observe the vaccine's effects on other children before making informed decision for their children with COVID-19 vaccination (96). The hesitancy observed with COVID-19 vaccines in children may have parallels with the introduction of other new vaccines for kids. The literature suggests that whenever a new vaccine is introduced, especially for children, there can be varying degrees of hesitancy (97). Also, based on the study findings, despite some of the study participants who had their children vaccinated expressing concerns about the COVID-19 vaccines, it seems that these fears did not ultimately deter them from proceeding with vaccination. Collectively, these findings emphasize the importance of addressing concerns surrounding COVID-19 vaccination safety for SA children. This can be done through effective public health messaging tailored specifically for parents (98).

Effective public health messaging is crucial in navigating and addressing concerns surrounding COVID-19 vaccination for SA children. This perspective also underscores the importance of providing reliable evidence to SA parents to encourage the vaccination of their children against COVID-19. This can be achieved by prioritizing the dissemination of accurate information about the COVID-19 vaccine specifically for parents of children aged 5-12 years within the SA community (99). This information may encompass COVID-19 post-vaccination side effects, safety, and effectiveness of the vaccines.

Effective public health messaging specific to COVID-19 vaccination for SA children can also be achieved through educational initiatives with their healthcare providers, particularly family doctors. These approaches were also based on the recommendation by some of the study participants in this thesis study. Participants expressed strong reliance on family doctors, indicating that people generally trust and believe in the guidance provided by their family healthcare. In addition, the effectiveness of the public health messaging can be further enhanced when it resonates with a specific target audience, such as SA parents who may be COVID-19 vaccine hesitant.

Effective Communication Strategies

Another aspect of public health messaging involves prioritizing effective communication strategies to address knowledge gaps about COVID-19 vaccines for SA children. This aspect was also echoed by the participants in this study, highlighting the

gap in communication with regards to COVID-19 vaccine for children among the SA community in BC. Communicating information in a clear, concise, and understandable manner enables individuals to make better-informed decisions regarding COVID-19 vaccination (99). It is imperative to create communication strategies that are linguistically sensitive as well. Literature has also highlighted the reciprocal relationship between fear and communication, underscoring their mutual influence on COVID-19 vaccine acceptance (101). A clear, transparent, readily understandable, and empathetic communication of COVID-19 vaccine related information can help alleviate fear of vaccination. Utilizing different communication channels, such as social media platforms can also enhance effectiveness with communication. One of the participants mentioned the need to have trustworthy information on social media.

Employing communication strategies in preferred languages was expressed by participants in this qualitative study. This underscores the importance of implementing language-specific communication strategies in public health messaging and interventions, particularly within ethnic populations like SA in Canada. By doing so, we also ensure equitable access to essential information about COVID-19 vaccination, thereby helping to overcome barriers and promote informed decision-making with the vaccine. Recognizing that effective communication is an ongoing process, continuous evaluation and adaptation based on community feedback are essential.

BC is actively addressing COVID-19 vaccine hesitancy through comprehensive public health campaigns and incentive programs. In particular, the South Asian Health Institute (SAHI) has made significant efforts to promote COVID-19 vaccination within the SA community. Recognizing the importance of culture and its impact on health, SAHI engages SA communities with culturally competent, language-specific health messaging to achieve better health and wellness (102). SAHI has collaborated with community partners to coordinate community vaccination clinics. Additionally, they share trusted information about vaccination on various social media platforms. However, there are currently few programs specifically tailored for SA parents, especially those with young children who are vaccine hesitant. This could be an area for improvement, aiming to reach more members of the South Asian community.

In conclusion, effective public health messaging can counteract vaccine-related rumors that exacerbate fear, address misinformation, and enhance vaccine acceptance

among SA children. Effective communication about vaccine-related information in preferred languages is essential to addressing public health concerns. Therefore, it should be utilized among SA parents while promoting the acceptance of COVID-19 vaccines for their children.

4.2. South Asian Parent Empowerment: Navigating the post-COVID-19 vaccination health experiences on COVID-19 Vaccination for South Asian Children

SA parents' perceived health outcomes following COVID-19 vaccination influenced their attitudes and actions regarding vaccinating their children against COVID-19. These perceived health outcomes expressed by participant in this qualitative study ranged from mild symptoms such as muscle/arm pain, cold, fever and swelling at the injection site to other health outcome such as shortness of breath, allergies, and heart disease. Some of the perceived health outcomes discussed by our participants may have been related to the vaccine. Similar effects were also reported in other studies (103,104,105). These studies revealed primary side effects of the COVID-19 vaccine, including fatigue, drowsiness, headache, and joint/muscle pain (103). Another study also reported health outcomes such as shortness of breath and impaired vision, which were similarly expressed by the study participants (104).

However other health outcomes reported by participants as related to the vaccine were temporally associated but not caused by the vaccine. For example, a participant explained how the COVID-19 vaccine were perceived to have negatively affected their vision and that of their spouse, but far-sightedness is not a recognized side-effect of COVID-19 vaccines. Regardless of the actual cause of the health event, the fact parents in our study perceived these events to be related to their COVID-19 vaccine influenced their decision making for the vaccine for their children. When considering COVID-19 vaccination for their children, parents had concerns that their children might suffer adverse consequences based on their own perceived experiences with the COVID-19 vaccine. Understanding and addressing these multifaceted influences are crucial for fostering trust and COVID-19 acceptance for SA children within these communities. Navigating the influence of these health experiences post-COVID-19 vaccination will involve empowerment within this community and improved health literacy.

Empowerment of the SA parent can be facilitated by establishing mechanisms for continuous monitoring of post-vaccination health experiences within SA communities. The Canadian Adverse Events Following Immunization Surveillance System serves as a foundational structure nationwide. However, optimizing its reach within the SA community may enhance COVID-19 vaccine uptake for children. This optimization involves actively soliciting feedback from SA parents regarding their vaccination experiences by conducting regular surveys and assessments tailored to the SA parents. With these data, we can gain valuable insights into their post-vaccination experiences and inform targeted interventions. This approach may enhance the profile of COVID-19 vaccines for children through the acknowledgment, monitoring, and management of such post COVD-19 vaccination outcome.

Establishing and implementing peer support networking can also empower SA parents and improve vaccine decisions for their children. This peer support networks or groups may involve SA parents who have received the COVID-19 vaccine sharing their experiences, concerns, and coping strategies with other parents within a supportive community environment. Additionally, highlighting the success stories of those who have received the COVID-19 vaccine without experiencing adverse effects may also inspire confidence in vaccination among peer within this community.

Effective community involvement can also foster COVID-19 vaccine acceptance among SA children and empower SA parents (106). This community engagement initiatives may also involve collaborating with community leaders, religious figures, and local organizations in educating the community on different public health initiatives and addressing any concerns or misconceptions. An example of such a local organization in BC is the South Asian Family Association, a non-profit organization (107). Through the two-way conversations, these organisations become advocates for vaccination against COVID-19. Implementing vaccine mandates and policies can also be effective in facilitating this communication channel among community members. Additionally, this approach fosters trust and credibility within the SA community, thereby increasing the likelihood of acceptance and better adherence to vaccination policies and recommendations.

Primary health care providers can also play a crucial role in addressing these health concerns as they often serve as frontline educators and caregivers. This can be achieved by offering vital information which may address misunderstandings, and improve health literacy through their expertise and direct engagement with families.

4.3. COVID-19 Vaccination Policies and Health benefit: Enhancing understanding, dispelling misperceptions, and prioritizing vaccination for health and safety

From these studies findings, participants also shared their thoughts on their attitude towards COVID-19 vaccine for their children had been shaped by COVID-19 mandates, policies, and recommendation. Some of these parents reported feeling obligated to get their child vaccinated for COVID-19 to keep up with everyday life and societal requirements. Participants who had their children vaccinated discussed their experiences with these mandates in relation to international travel for their families. This fact became a key motivating factor influencing their action toward COVID-19 vaccination, as they believed their child needed to be vaccinated to qualify for travel. Consequently, they viewed vaccinations as a necessity.

COVID-19 vaccination policies, including mandates in BC for adults and federal travel mandates to Canada, were introduced as crucial public health measures aimed at controlling the spread of the SAR-CoV-2 and safeguarding the general populations. The rationale behind travel mandates for vaccinations is to protect both travelers and communities from infectious diseases prevalent in different regions. While BC and federal mandates fall within these community's sphere of influence, travel mandates from other countries vary widely based on local health policies, posing challenges for travelers navigating diverse requirements.

Previous research conducted in Canada has shown that the COVID-19 vaccine mandate is perceived as a factor influencing COVID-19 vaccine uptake within this community. Specifically, the mandate has been reported to significantly drive the COVID-19 vaccine movement within this community. A qualitative study within the SA community explored their perceptions of COVID-19 risk, vaccine access, and

confidence, highlighting the mandate's crucial role in shaping vaccine decision-making in this demographic (108).

Based on the outcomes of this study, some SA parents primarily vaccinated their children as they perceived vaccination as necessary for international travel, which suggests an exploration of the motivations behind parents vaccinating their children, especially concerning travel requirements within this immigrant population. It suggests that prioritizing vaccination for travel may not only be to reduce the risk of spreading diseases but also to fulfill entry requirements for their destination countries, thereby facilitating barrier-free travel. The study also highlighted a misconception where children were vaccinated under the assumption of complying with BC provincial vaccination mandates for adults, without fully understanding that these mandates did not apply to children within the province.

It is imperative to shift the focus towards promoting informed decision-making rooted in comprehensive information about vaccine safety, efficacy, and their role in preventing serious illnesses. By educating parents about the broader health benefits of vaccination beyond legal mandates, we empower them to make choices that prioritize their children's well-being. This can be further done by directing individuals to credible sources such as public health websites and healthcare professionals for accurate information on vaccine mandates and their benefits. In addition, transparent and timely dissemination of these information is also very important to accurately preventing and tackle misperception of these public health policies.

In conclusion, to foster acceptance of vaccine mandates among SA children, it is essential to move beyond mere legal compliance towards vaccination to providing clear, accurate information about the benefit of vaccination. This will foster deeper understanding and acceptance of vaccination efforts, serve as a proactive effort to build trust and dispel misperception, particularly in areas where vaccine mandates may be misunderstood.

4.4. Understanding South Asian Parents' Perspectives on COVID-19 Vaccination for Children: Cultural Influence

This qualitative research study on COVID-19 vaccination for SA children also revealed notable cultural influences towards COVID-19 vaccination. Within this context, includes trust in authority figures, including government and healthcare providers, is a known ingrained cultural norm within the SA community (58). Belief in government actions as protective and beneficial, and the influential role of family doctors in healthcare decision-making by adhering to their recommendations, were notable findings from the study that express cultural emphases and beliefs. Also, the role of word-of-mouth communication which complements formal communication channels, is also a rooted cultural influence within this community. Rumors circulating among participants about the vaccine's suitability for children also underscored this phenomenon.

These cultural influences are observed to shape how SA parents perceive and engage with COVID-19 vaccination for their children. Therefore, recognizing these dynamics offers valuable insights into strategies for fostering positive attitudes toward COVID-19 vaccination for children within this community.

4.5. Strengths and Limitations

This study exhibits several notable strengths, foremost among them is the unique perspective of SA parents in BC regarding the COVID-19 vaccine for their children. A qualitative research approach, particularly the qualitative descriptive approach involving open-ended semi-structured interviews, enabled an exploration of individual experiences. Encouraging participants to share their perspectives directly fostered openness and trust which is a crucial element in research that facilitates genuine conversations and uncovers authenticity of study outcome.

Another strength lies in the inductive thematic approach employed in data analysis, from the meticulous analysis of the data transcript line by line to the final themes. This methodical approach ensured a close reporting of the data, building on the study's objective. The inductive nature of the qualitative data analysis allowed for the data to drive the themes that emerged. The absence of the need to employ a pre-existing concepts or frameworks also enhance this viewpoint. The incorporation of

quotations directly from the study participants also ensures that their voices are accurately represented.

Additionally, notable strength was the involvement of different coders in the analysis and interpretation of the data. This further enhanced the study's credibility. Peer debriefing and feedback from the diverse perspectives also contributed to minimizing potential biases. Throughout the study, transparency, reflexivity, and a commitment to maintaining objectivity were upheld, further enhancing study credibility and reliability. Having ideal participants representation based on COVID-19 vaccination status of SA children further strengthens the study. The range of narratives provides a diverse view, capturing the complexity of attitudes and perceptions within SA immigrant parents in BC.

One of the study's limitations was the sample size, which was constrained by the recruitment timeframe. The findings of this qualitative study cannot be generalized to the broader SA population, as they may not adequately represent all SA parents. A larger sample, including those in rural and remote areas, unvaccinated SA parents, Canadian-born SA parents, could yield additional insights. Comparative research across diverse locations could offer a broader understanding of vaccination attitudes among SA communities in BC. Also, data collection occurred online, potentially excluding groups of SA parents without internet access.

Another important limitation of the study was the restriction in language preference as only SA parent proficient in English language participated in the study. This limitation arose due to study's constraints in relation to resources and a lack of manpower for translation services. Consequently, individuals who primarily proficient in other non-English languages were excluded from the study. This restriction hindered the inclusion of other ideal participant in the study by narrowing the study's scope to English-speaking SA participants. As a result, findings from the study do not fully capture the perspectives and experiences of SA parents.

The non-participants (n=55) did not significantly differ from the participants in terms of demographics and other relevant factors, However, the high percentage of participants with higher university-level education does indicate a potential bias in the study population. This bias could influence findings, especially regarding health literacy,

awareness, and attitudes towards COVID-19 vaccination, potentially leading to differing vaccine acceptance and hesitancy rates compared to the general population.

4.6. Future directions

Future research endeavours may further explore the attitudes and perceptions of the SA parent toward the COVID-19 vaccine for their children by incorporating key informant interviews with stakeholders from the SA community. This integration could significantly enhance this qualitative study outcomes. Presenting these collective refined results could further strengthen the strategies to enhance positive messaging around COVID-19 vaccination for SA children. This is particularly impactful when promoting for future booster doses of COVID-19 vaccine for children within the SA community.

Future research may also seek to identify a broader range of opinions, mainly from SA communities in rural, remote, unvaccinated SA parents and other geographical location in Canada. Such efforts could yield additional insights and deepening the conversation on this topic. Also, efforts should be made to address language barriers and ensure inclusivity when carrying out these studies.

Within the public health sector in BC, interventions to promote COVID-19 vaccination of children may invest in collaborating with the different school districts in organizing meetings, webinars, or information sessions educating parent on COVID vaccination. This school program can also consider cultural inclusion, as this will potentially reduce vaccine hesitancy among this community, similar to findings reported in a study done in the UK. (109). Also, utilizing social media, community events, and culturally relevant educational materials can enhance the reach and effectiveness of COVID-19 vaccination messaging. These approaches may influence the vaccine uptake rate in BC.

In summary, the future directions outlined in this study hold immense promise for shaping the landscape of public health and vaccination programs, particularly within the SA community regarding the COVID-19 vaccination for children aged 5-12 years. These suggested avenues and the impact of these future directions may extend beyond improving health outcomes but foster a community-wide commitment toward COVID-19

vaccination. This commitment is crucial in the ongoing global effort to mitigate and eradicate COVID-19.

Chapter 5. Conclusion

The primary aim of this study was to explore the attitudes and perceptions of SA parents regarding the COVID-19 vaccine for their children. Participants' narratives illustrated the interplay of various influences and practical considerations in shaping vaccination decisions within this demographic. The findings from this study contribute to the understanding of vaccine hesitancy for the COVID-19 vaccine among children within SA. Beyond fear surrounding the COVID-19 vaccine for their children, the perception of the COVID-19 vaccine for SA children are influenced based on the post COVID-19 vaccination health outcomes. The study's finding indicates the need for effective public health messaging through the disseminating of accurate information and effective communication of COVID-19 vaccine related information.

Health issues identified by SA parents require attention and exploration to minimize the overall impact and foster a positive attitude toward COVID-19 vaccination for their children. Ensuring empowerment within this community through establishing mechanisms for continuous monitoring of post-vaccination health experiences and peer support networking can impact the influence of health experiences post COVID-19 vaccination on the attitude and perception towards COVID-19 vaccine for the SA children.

Community engagement in relation to vaccine mandates and policies is essential for vaccination acceptance within this community. This involvement may aid trust-building which will in turn shape better COVID-19 vaccination attitudes for SA children.

In conclusion, we need to continue navigating the complexities of vaccine hesitancy within diverse communities in BC through further research. These insights will better inform public health initiative, policymakers, and healthcare practitioners on targeted interventions to improve vaccine uptake in BC.

5.1. Final thoughts

Several factors play a key role in shaping the attitudes and perceptions of SA parents toward COVID-19 vaccination for their children. However, there remains a need to address the low vaccination rates in BC through further study and monitoring. This

qualitative research findings may serve as a foundation for generating hypotheses for further investigation. For instance, studies may look at investigating deeply into the specific health outcome post COVID-19 vaccination.

Given that SA parents view doctors and teachers as the most trustworthy sources of information regarding vaccinations, healthcare providers in BC may need to receive more training on cultural sensitivity and effectively improve communication of COVID-19 vaccine related issues with families from SA backgrounds. This approach can promote a positive trust and cooperation with regards to COVID-19 vaccine uptake among SA children in BC.

Policymakers may continue to consider implementing policies that support inclusive vaccination practices. This policy may involve advocating for inclusive language in official communications, ensuring cultural representation in public health initiatives, incorporating diverse perspectives in decision-making processes. Also regularly collecting and analyzing disaggregated data on vaccination coverage by ethnicity to tailor interventions accordingly. This approach would support COVID-19 vaccination uptake and contributes to a more equitable and culturally responsive healthcare system overall.

In conclusion, despite encountering numerous personal challenges during my time in Canada, my unwavering motivation and passion for this research project were fueled by my desire to hear SA parent share their narratives story and thought on this topic. This experience highlighted the importance of encouraging and amplifying people's voices, particularly when addressing health-related issues. This forms a significant takeaway for me as I continue my life journey. My hope is that this thesis research project transcends beyond graduate school, ensuring that the sacrifices made during this process becomes truly meaningful and worthwhile.

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Appendix A. Interview Guide

INTRODUCTION: Thank you once again for participating in this study. This interview will help us understand the attitudes and perceptions SA parent have towards the COVID-19 vaccine for their children. This is a non-judgmental space, so please feel free to share your opinions and thoughts about this topic, as this will give us valuable insight into this subject. As with the consent form, your personal information will be de-identified, assigned a random ID, and kept confidential. This data will be stored in a secure password-protection location inside our office. You can withdraw at any point. Please remember that there are no right or wrong answers to this question.

CONSENT & PURPOSE: Please confirm that you consent to having our conversation recorded.

Let's start the recording. Firstly:

1. How would you describe your current COVID-19 vaccination status (vaccinated, -Unvaccinated, booster i.e., first booster, two booster or more)?
   a. As a parent, were there any factors you considered when deciding whether to get vaccinated or not vaccinated for COVID-19? Could you tell me more about that?
   b. Have you experienced or faced any form of barriers towards getting the COVID-19 vaccine?
   c. How would you describe the vaccination status of the other family members?

2. Has your child (ren) been vaccinated against COVID-19? Currently up to date?
   a. Can you tell me something you know or have heard about the COVID-19 vaccine for children?
   b. Tell me, how do you feel about the COVID-19 vaccine for children? Could you tell me more about that?
   c. When considering the COVID-19 vaccine for your child (ren), what were your reason or what factors did you consider in your decision? Could you tell me more about that?

3. Has your child (ren) ever been vaccinated before for any other health concern? Could you tell me more about that?
   a. Tell me about your past experiences with other children's vaccine other than the COVID-19 Vaccine?
   b. How has these past experiences affected your decision with the COVID-19 Vaccine for children?
   c. What are your thoughts on natural child self-immunity against COVID-19?

4. Where do you go to find information about COVID-19 vaccine for children? Could you tell me more about that?
    a. If your child were to receive this vaccine from a health professional, which health professional would you prefer (i.e., the family doctors, local pharmacist, community nurses, public health volunteer)?

5. What are your views on the benefit of the COVID-19 vaccine for your child (ren)?

    Probe question:
    a. What do your thoughts on the potential COVID-19 vaccine side effects for child (ren)?
    b. Were your feeling and attitude toward other childhood vaccine different before the pandemic?

    Follow up question:
    a. Were there any other notable barriers or challenges you faced when getting the COVID-19 vaccines for your child (ren)?
    b. Where their considerations in terms of the age of your child age before deciding to vaccinate against COVID- 19?

6. In your opinion, can you tell me what would help parents make an informed decision about the COVID-19 vaccine? Could you tell me more about that?
    a. Is there a better or different way to communicate the COVID-19 vaccine to SA parents?
    b. How would you feel if you could find all the information you needed about the COVID- 19 vaccines in your language?
    c. Would you like to share any other thoughts regarding COVID-19 vaccine for children?

Would you like to see a summary of the study results when finished?

That is all the questions I have for you. Is there anything else that you would like to touch on?

If anything comes up, please let us know by sending us an email.

Thank you for participating in this study.

Your gift card will be sent to you through the email details on our file.

CoHeaRT Lab Research

Appendix B. Participant Consent Form

Attitudes and Perceptions in Parents of SA Origin to vaccinate their Children against SARS-CoV-2 infection.

The University and those conducting this project subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of participants.

Principal Investigator:	**Primary Study Contact:**	**Research Manager:**
Dr. Scott A. Lear, PhD	Daodu Tope, M.Sc.,	Rochelle Nocos, Research Manager
Faculty of Health Sciences, Simon	Graduate Student	Community Health Research Team
Fraser University		(CoHeaRT), St. Paul's Hospital

Co-Investigator:
Dr. Julie Bettinger, PhD, MPH, Professor, Department of Pediatrics, UBC
Dr Steven Reynolds, PhD, Associate Professor, Department of Biomedical Physiologyand Kinesiology, SFU

Site of Investigation: St. Paul's Hospital, Vancouver, BC, Canada

Who is in charge of the study?
This study is being conducted by a graduate student and member of the Community of Health Research Team at Simon Fraser University.

Why are you invited to take part in this study?
You are being invited to participate in this study, as you are a participant in the COVID CommUNITY Study and a parent to a child aged 5-12 years. This study will provide us an opportunity to provide a much-needed health information regarding COVID-19 vaccination for children from SA origin.You also have access to at least one device (smartphone) that can allow video call on zoom with internetaccess and are able to provide your consent for this study.

What is the purpose of the study?
The goal of the study is to understand the attitudes and perceptions of SA parents living in theBC towards vaccinating their children (aged 5-12years) against COVID-19.

Your participation is voluntary
Your participation is entirely voluntary, choosing whether or not to participate is entirely your choice. Ifyou decide not to participate, it will not affect your participation in the COVID CommUNITY Study.

Before you decide, it is important for you to understand what the research involves. This consent formwill tell you about the study, why the research is being done, what will happen to you during the studyand the possible benefits and/or risks.

If you give permission to participate in the study, you will be asked to sign this form. However, you arestill free to decide not to participate and can also withdraw at any time without giving any reasons for your decision.

What will my participation involve?
Data on age, sex, socioeconomic status and vaccine status will be obtained from your data in the COVID CommUNITY Study. You will be asked to attend a one (1) interview session with will be done online.

During this session, you will be asked questions regarding your personal perspective on COVID-19 vaccine for your child (ren). The session will be recorded and transcribed to accurately record your views and opinions. At no time will any identifying information (such as your name, address, etc.) be recorded. The research team will need to keep your contact information for follow-up purposes if needed. The information

collected during this process i.e. the signed consent forms and identifiable data retrieved fromthe demographic data of the COVID CommUNITY study will be kept separately from the interview audio recording. These materials will be kept in locked cabinets in locked offices in Dr. Lear's lab at St. Paul's Hospital, on password-protected computers on a lab drive only accessible to designated research team members which are housed on a secure, encrypted hospital server. The Audio zooms recordings will be uploaded to the study's SFU One Drive within a week of the interview. The SFU One Drive is a secure cloud storage system which alleviates any risk of losing any sensitive information.

What are the risks of participation?
There is an extremely remote possibility of loss of confidentiality of participants' responses. It is possible some of the questions may cause you discomfort and you are free to not answer them if you wish. Data security features at the time of collection, data entry and for long-term storage will be used to maximize confidentiality.

What are the benefits of participating?
It is possible you may not benefit from this study. Your participation may help inform the public healthpolicies and practices on some of the barriers regarding COVID-19 vaccine for children and ultimatelyimprove vaccine practices.

What are the costs of participation?
Your participation in this study will be provided at no cost to you. We will provide a token of appreciation in the form of a one-time $25 gift card for participation in this study, and completion ofstudy related activities.

How will your privacy be respected?
Your confidentiality and privacy will be respected. Unless you allow them to, the study team will not tell anybody else that you have been a part of this study. They will not release any information to anybody else that could be used to identify you unless they are required to do so by law. For example, researchers are required to report if a participant is believed to be at risk for harming him/herself or others. To protectyour privacy, the study team will remove any information that may be used to identify you from any study documents, and instead of your name appearing on them, you will be identified by a unique study number that applies only to you. Only this number will be used on any research-related information collected for this study, so that your identity as part of the study will be kept completely private. Only Dr.Scott Lear, Tope Daodu, the research coordinator, and research assistants will have the ability to link this number with your personal information, and the linking information will be kept in a locked cabinet and room at St. Paul’s Hospital under the supervision and control of Dr. Scott Lear. The list that matches yourname to the unique study number that is used on your research-related information will not be removed or released without your consent unless required by law. The session recorded data will be uploaded to the study's SFU One Drive. Only the main contact, the research investigators, study research assistants, research coordinator, study researchers will have access to this data. At the end of the study, the email address provided will be deleted from all study data to remove any connection between data and personal identifiers.

What if I decide to withdraw my consent to participate?
Your participation in this study is purely voluntary. Your decision not to take part in the study will involve no penalty or loss of help to which you are otherwise entitled. You may discontinue your participation in this study at any time and there will be no penalty from this decision. Should you wish to cancel your consent to take part in the study please notify the study staff at the telephone number listed onthe first page of this consent form. You have the right to withdraw your participation from the study completely (this means you do not wish to be called by any study staff after you withdraw).

You have the right to request the destruction of your information collected during the study. You may also choose to leave the study and allow the investigators to keep the data already collected until the pointof withdrawal. If you choose to have your data destroyed, this request will be fully respected. Withdrawalfrom the study will not affect your participation in the COVID CommUNITY study.

Dissemination of results
Reports/manuscripts that indicate relevant findings will be publicly available online (open access journals). Participants will not be named, nor will they be identifiable in publications and/or presentations. As publications of study results become available, links will be posted on the publiclyavailable CoHeaRT Website: http://coheart.ca/.

Who do I contact if I have questions about the study?
If you have any questions or desire further information about this study before or during your participation, you can contact Dr. Scott Lear or Ms. Daodu Tope.

Who do I contact if I have any questions or concerns about my rights as a participant?
If you have any concerns about your rights as a research participant and/or your experiences while participating in this study, please contact the Director, SFU Office of Research Ethics.

Parent/Guardian Consent Enrolment Form

My signature on this consent form means:

- I have read and understood the information above, or it has been read to me.
- I have had the opportunity to ask questions and have had satisfactory responses
- I understand the information sheet and consent form.
- I understand that I am not giving up any of my legal rights because of signing this consent form.
- I understand that my participation in this study is voluntary and that I am completely free to refuse to participate or to withdraw from this study at any time.
- I have read this form and I freely consent to participate in this study. I understand that I will be given a copy of this signed and dated consent form.

Initials: _____

1) Can we contact you for future studies?

☐ Yes ☐ No Initials: _____

My signature indicates that I voluntarily consent to my participation in this study and have received acopy of this consent form for my own records.

Participant signature	Printed Name	Date

Participant signature	Printed Name	Study Role	Date Obtaining Consent

Appendix C. Demographics table (SA Children COVID-19 vaccine Study)

Participant Characteristics and COVID-19 Vaccination Status

Participant ID	Population Group	Marital Status	Parent		Child		Number of Children	Child's age (Years)
			Sex	Status	(recruited)	(Interviewed)		
Interview1	SA	Married	Female	Vaccinated	Unvaccinated	Unvaccinated	2	11&12
Interview2	SA	Married	Female	Vaccinated	Unvaccinated	Unvaccinated	2	10 & 6
Interview3	SA	Married	Female	Vaccinated	Unvaccinated	Partially vaccinated (Single dose)	3	7, 9 &13
Interview4	SA	Married	Female	Vaccinated	Unvaccinated	Vaccinated	2	10 & 15
Interview5	SA	Married	Male	Vaccinated	Vaccinated	Vaccinated	2	5 & 12
Interview6	SA	Married	Male	Vaccinated	Vaccinated	Vaccinated	2	9&12
Interview7	SA	Single	Female	Vaccinated	Vaccinated	Vaccinated	1	8
Interview8	SA	Married	Female	Vaccinated	Vaccinated	Vaccinated	2	6&11