

Exploring vaccination practices of midwives in British Columbia

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Abstract

Background: Registered midwives in British Columbia (BC) are primary health care practitioners for healthy people throughout pregnancy and for approximately 6 weeks postpartum. BC registered midwives are authorized to prescribe and administer certain vaccines to adults under their care during the perinatal period and hepatitis B vaccine to high-risk newborns. However, little has been documented about their recommendations for, and administration of, prenatal and infant vaccinations. This study surveyed midwives currently practicing in British Columbia to understand their vaccination practices.

Methods: An online survey was administered to the members of the Midwives Association of BC in spring 2018. Outcome measures were the proportion of midwives who discussed, recommended, and administered the following vaccines: influenza, varicella, rubella, and infant hepatitis B. The proportion of midwives who discussed and recommended infant vaccines was measured. Barriers to discussion, recommendation, and administration of vaccines were captured.

Results: Sixty-three percent of 108 respondents administered vaccines to their clients. Hepatitis B and rubella were the most frequent vaccines administered. Logistical concerns were the greatest barrier to vaccine administration. This was followed by the perception that vaccine administration is not within the scope of practice of midwives, especially for influenza vaccine. Midwives who administered vaccines were significantly more likely to discuss and recommend vaccines to their clients and their infants.

Conclusions: The majority of BC midwives discuss, recommend, and administer vaccines to their clients. Our survey highlighted key areas to address to strengthen midwifery capacity to discuss, recommend, and provide prenatal and infant vaccines.

KEY WORDS

infant immunization, Maternal immunization, midwifery, perinatal care, prenatal care

1 | INTRODUCTION

In Canada, two vaccines are nationally recommended during pregnancy: (a) influenza vaccine for pregnant people in any trimester during the influenza season (October–April); and (b) tetanus/diphtheria/acellular pertussis (Tdap) vaccine for pregnant people in every pregnancy, ideally between 27 and 32 weeks' gestation (though it can be given as early as 13 weeks' gestation).¹ National recommendations are also in place for postpartum administration of measles/mumps/rubella and varicella vaccines for nonimmune mothers and postnatal administration of hepatitis B immune globulin or hepatitis B vaccine for infants of hepatitis B–infected mothers. With multiple new vaccines in development (eg, for respiratory syncytial virus, Group B streptococcus, and SARS-CoV-2) for potential use in pregnancy or in the postpartum period, perinatal vaccination is a topic that will likely continue to be important and contentious going forward.² Perinatal health care practitioners, including midwives, are expected to discuss perinatal vaccines for which national recommendations exist, regardless of their role in vaccine administration or the level of public funding available for specific vaccines.

Overall in Canada, 43% of pregnant people were vaccinated with Tdap, and 45% with influenza vaccines in 2019.³ However, funding and delivery of vaccines is a provincial responsibility and considerable heterogeneity exists with respect to which practitioners administer perinatal vaccines and which vaccines are publicly funded. For example, in the Atlantic province of Nova Scotia, where both vaccines are provincially funded, the 2019 national survey of vaccination in pregnancy found 74% of pregnant people received influenza vaccination, and 63% received Tdap.³ However, in British Columbia (BC), where public funding for influenza vaccine during pregnancy has been in place for over 10 years, just 50% of pregnant people received influenza vaccination in 2019, whereas 26% of pregnant people received Tdap in the same year before the start of provincial funding for Tdap in pregnancy (which began in November 2020).³

Similar to the United States and several European countries, government-sanctioned midwifery practice in Canada was limited and rare until the 1990s, when provinces began to regulate midwifery as a health profession.⁴ From the 19th century until 1961, midwifery care in Canada was largely relegated to northern and remote regions. However, in the 1970s a new movement to legalize midwifery grew, and in 1991, Ontario became the first province to pass a law⁴ adding midwifery as an autonomous health profession integrated into the health system. Today, the majority of Canadian provinces and territories regulate and fund registered midwifery care for pregnancy, birth, and postpartum care, yet availability, scope, and structure of midwifery services vary.⁵

Though BC was not the first province to introduce registered midwifery, it has become a leader in the mainstream expansion of midwifery care in Canada. Fifteen percent of all births in BC are led by a registered midwife, and 22% of all pregnancies (the highest proportion of any province in Canada) involve care by a registered midwife.⁶ Although still well below the proportion of midwifery births in other countries, such as Australia, New Zealand, and Ireland, where the majority of births are midwifery-led,⁷ BC midwives play an increasingly critical role in perinatal care and in disseminating and advocating for health measures. BC midwives enjoy a comprehensive scope of practice, which includes prescribing and/or administering prenatal vaccines including seasonal influenza vaccine and Tdap vaccine, and postnatal vaccines that include measles/mumps/rubella and varicella vaccines, hepatitis B immune globulin, and hepatitis B vaccine.⁶ Midwives have the potential to be important advocates for vaccination in Canada, as their clientele often seek birth experiences with greater autonomy and lower medical intervention, and may be more hesitant about vaccines than the general public.⁸

Support for vaccination among midwives varies depending on the setting, ranging from 56% in Ontario, Canada,⁹ to over 90% in Australia.¹⁰ Evidence exists that some health care practitioners (HCPs), including midwives, hold vaccine-hesitant views in their personal and professional lives, but it is unclear what, if any, effect such views have on their practice.^{7,11} In BC, although we know that vaccine receipt during pregnancy is suboptimal and midwives provide a substantial portion of perinatal care, no data exist on how often perinatal vaccines are discussed, recommended, or administered by registered midwives to adults and infants in their care. Given the substantial and increasing role of midwives, and the growing role of perinatal vaccinations recommended for the prevention of infectious disease, it is essential to better understand how midwives approach perinatal and infant/childhood vaccinations. Thus, the purpose of this study was to examine midwives' vaccine practices in British Columbia.

2 | METHODS

An electronic survey of BC registered midwives was conducted from May 7 to August 7, 2018. The survey link was distributed through the Midwives Association of BC e-mail list and Facebook page. Participants received an invitation with a survey link and provided informed consent online before proceeding to the survey. A reminder e-mail was sent three days after the initial e-mail, and three additional reminder e-mails were sent throughout the course of the data collection window. Respondents received electronic gift cards worth \$50.00 for completing the survey. The University of British Columbia provided research ethics approval (H17-03340).

TABLE 1 Characteristics of British Columbia midwife respondents, 2018

Characteristics	Vaccinates in practice N = 68	Does not vaccinate in practice ^a N = 40	Total N = 108	P-value
Mean years in practice (range)	6.59 (1, 40)	8.06 (0, 27)	7.13 (0, 40)	0.27
Mean annual number of clients (range)	72.07 (0, 500)	63.76 ^b (0, 500)	69.10 ^b (0, 500)	0.65
Location of primary practice				
Large urban population center (an area with a population of at least 100 000 people)	15 (22.1%)	18 (45.0%)	33 (30.6%)	0.03
Medium population center (an area with a population between 30 000 and 99 000)	29 (42.6%)	11 (27.5%)	40 (37.0%)	
Small population center (an area with a population <30 000)	24 (35.3%)	10 (25.0%)	34 (31.5%)	
Prefer not to answer ^c	0 (0.0%)	1 (2.5%)	1 (0.9%)	
Age group				
20-29 y	11 (16.2%)	4 (10.0%)	15 (13.9%)	0.48
30-39 y	30 (44.1%)	21 (52.5%)	51 (47.2%)	
40-49 y	23 (33.8%)	12 (30.0%)	35 (32.4%)	
50+ y	4 (5.8%)	3 (7.5%)	7 (6.5%)	
Currently hold other medical credentials or degrees (eg, university, nursing, medicine)	21 (30.9%)	16 (40.0%)	37 (34.3%)	0.24
Training				
Graduation from a CMBC-recognized midwifery education program	37 (54.4%)	27 (67.5%)	64 (59.3%)	0.21
Registration in another Canadian province or territory	30 (44.1%)	3 (7.5%)	33 (30.6%)	
Completion of the UBC's Internationally Educated Midwifery Bridging Program	1 (1.5%)	2 (5%)	3 (2.8%)	
Other/prefer not to answer ^c	4 (5.9%)	8 (20.0%)	12 (11.1%)	

^aThree respondents did not indicate whether or not they administered vaccines and were included in the does not administer group.

^bMean excludes outlier of 2016.

^cExcluded from significance testing.

The survey was informed by a previous survey of midwives administered in Washington state,¹² and questions used in a Canadian national survey of maternity care practitioners.¹³ It consisted of a mixture of open-ended and closed-ended questions. The survey included 10 demographic and practice questions (eg, age, number of years in practice, degrees, and credentials) and 43 questions about discussing, recommending, and administering perinatal (eg, influenza, hepatitis B, varicella, and rubella) and infant vaccinations, trusted and reliable sources of information about vaccinations, and reasons for not discussing, recommending, and/or administering vaccinations with clients. Participants were asked to rank how frequently (on a scale from never to always) they discussed, recommended, and administered each specific vaccine and were then offered an optional free-text field after each closed-ended question to explain their choice. Participants were also

provided an optional free-text field at the end of the survey for any additional comments. For survey purposes, an “alternate” childhood vaccination schedule was defined as one that differed from the BC vaccination schedule (see <https://www.healthlinkbc.ca/bc-immunization-schedules>). The survey was pilot-tested with five BC midwives to ensure surface validity and question clarity and was revised before distribution. The pilot-tested responses were not included in the final data set. The full survey instrument is provided in the Supplementary Materials.

2.1 | Analysis

An initial descriptive analysis of each question was done. The chi-square or Fisher exact test was used to explore prevalence

of, and associations between, characteristics (ie, type of midwifery training or certification, location of practice, numbers of years in practice) and reported vaccination practices (discussing, recommending, and administering). Statistical significance was achieved with a p -value ≤ 0.05 . Analyses were done in R version 3.5.3.

3 | RESULTS

A total of 108 surveys were completed for a response rate of 39% (108/278) among BC registered midwives. Sixty-three percent ($n = 68$) of respondents reported administering vaccines as part of their practice. Those who administered vaccines were significantly more likely to practice in small communities (35% versus 22%, respectively, $P = 0.03$). Otherwise, they were similar in other demographic and practice characteristics to those who did not administer vaccines (Table 1).

3.1 | Vaccine administration

Reasons provided for never or occasionally administering perinatal vaccines by vaccine antigen are shown in Table 2. Those midwives who never or occasionally administered vaccines reported three main reasons for this: 1) logistical concerns, such as the lack of a vaccine refrigerator; 2) they did not see it as within their scope of practice; and 3) not wanting to pressure their clients/letting their clients decide. Concern about the safety of vaccines was rarely stated as a reason for nonadministration of perinatal vaccines.

Among midwives who administered vaccines, provision of infant hepatitis B vaccine when indicated¹ was most

frequently reported, with 54% administering it always, sometimes, or occasionally (Table 3) to the infants of hepatitis B-positive clients. Prenatal influenza, postnatal rubella, and postnatal varicella were the next most frequently administered vaccines at 44%, 46%, and 41%, respectively. Depending on the vaccine, the prevalence of discussing and recommending vaccines was 15%-20% higher among midwives who administered vaccines (Table 3). Reasons provided for never or only occasionally discussing and recommending perinatal vaccines are shown in Table 4. Although reasons varied depending on the vaccine, the most frequently cited reason across all vaccines was not wanting to pressure the client or letting the client make their own choice.

3.2 | Vaccine discussions

Midwives who discussed influenza vaccines ($n = 96$) were asked when they held these discussions. Responses according to frequency were as follows: during the influenza season (51%); first (22%), second (27%), and third (27%) trimester; and postpartum (14%). The influenza vaccine was recommended most frequently during influenza season (42% of midwives) followed by the third trimester (21%) and during the first trimester (18%).

In terms of infant vaccine conversations, midwives who administered any vaccines were significantly more likely to always discuss ($P < 0.0001$) and recommend ($P = 0.01$) infant vaccines, whereas midwives who did not administer vaccines were significantly more likely to always, sometimes, or occasionally recommend alternatives to the BC infant immunization schedule ($n = 9$, 22% versus $n = 4$, 6%, $P = 0.01$). Thirteen midwives (including both those who administered and did not administer vaccines) recommended alternatives

TABLE 2 Reasons provided by midwives in British Columbia for never or occasionally administering specific perinatal vaccines, 2018

Reason for not discussing vaccines	Influenza (N = 70)	Varicella (N = 63)	Rubella (N = 56)	Hepatitis B (N = 41)
Financial concerns	3 (4.2%)	2 (3.2%)	1 (1.8%)	1 (2.4%)
Logistical concerns	19 (27.1%)	17 (27.0%)	17 (30.4%)	2 (4.9%)
Time constraints	11 (15.7%)	5 (7.9%)	3 (5.4%)	0 (0%)
I don't see this as within my scope of practice	20 (28.6%)	13 (20.6%)	8 (14.3%)	7 (17.1%)
I don't want to pressure my clients/make them uncomfortable/ I want to let my clients decide what is best for them	11 (15.7%)	7 (11.1%)	6 (10.7%)	0 (0%)
I don't feel I have enough information	8 (11.4%)	7 (11.1%)	2 (3.5%)	0 (0%)
I don't think the vaccine is safe	4 (5.7%)	4 (6.3%)	1 (1.8%)	0 (0%)

Note: Responses are not mutually exclusive. Percentage calculated on total for each column.

TABLE 3 Vaccination practices for British Columbia midwives, 2018

Practice	Vaccinates in practice N = 68 (%)	Does not vaccinate in practice ^a N = 40 (%)	Total N = 108 (%)
Discusses influenza vaccine			
Always	19 (27.9)	7 (17.5)	26 (24.1)
Sometimes	31 (45.6)	16 (40.0)	47 (43.5)
Occasionally	15 (22.1)	8 (20.0)	23 (21.3)
Never	3 (4.4)	3 (7.5)	6 (5.6)
Missing/prefer not to answer	0 (0.0)	6 (15.0)	6 (5.6)
Recommends influenza vaccine			
Always	14 (20.6)	14 (35.0)	28 (25.9)
Sometimes	30 (44.1)	5 (12.5)	35 (32.4)
Occasionally	20 (29.4)	5 (12.5)	25 (23.1)
Never	4 (5.9)	6 (15.0)	10 (9.3)
Missing/prefer not to answer	0 (0.0)	10 (25.0)	10 (9.3)
Administers influenza vaccine			
Always	4 (5.9)	0 (0.0)	4 (5.9)
Sometimes	28 (41.2)	0 (0.0)	28 (25.9)
Occasionally	16 (23.5)	0 (0.0)	16 (14.8)
Never	20 (29.4)	34 (85.0)	54 (50.0)
Missing/prefer not to answer	0 (0.0)	6 (15.0)	6 (5.6)
Discusses varicella vaccine			
Always	24 (35.3)	19 (47.5)	43 (39.8)
Sometimes	23 (33.8)	2 (5.0)	25 (23.1)
Occasionally	10 (14.7)	4 (10.0)	14 (13.0)
Never	0 (0.0)	6 (15.0)	12 (11.1)
Missing/prefer not to answer	6 (8.8)	8 (20.0)	14 (13.0)
Recommends varicella vaccine			
Always	18 (26.5)	18 (45.0)	36 (33.3)
Sometimes	19 (27.9)	3 (7.5)	22 (23.1)
Occasionally	23 (33.8)	2 (5.0)	25 (23.1)
Never	6 (8.8)	6 (15.0)	12 (11.1)
Missing/prefer not to answer	2 (2.9)	11 (27.5)	13 (12.0)
Administers varicella vaccine			
Always	10 (14.7)	0 (0.0)	10 (9.3)
Sometimes	19 (27.9)	0 (0.0)	19 (17.6)
Occasionally	15 (22.1)	0 (0.0)	15 (13.9)
Never	19 (27.9)	29 (72.5)	48 (44.4)
Missing/prefer not to answer	5 (7.4)	11 (27.5)	16 (15.0)
Discusses hepatitis B vaccine			
Always	28 (41.2)	15 (37.5)	43 (39.8)
Sometimes	24 (35.3)	0 (0.0)	24 (22.2)
Occasionally	8 (11.8)	3 (7.5)	11 (10.2)
Never	2 (2.9)	2 (5.0)	4 (3.7)
Missing/prefer not to answer	6 (8.8)	20 (50.0)	26 (24.1)

(Continues)

TABLE 3 (Continued)

Practice	Vaccinates in practice N = 68 (%)	Does not vaccinate in practice ^a N = 40 (%)	Total N = 108 (%)
Recommends hepatitis B vaccine			
Always	24 (35.3)	18 (45.0)	42 (38.9)
Sometimes	20 (29.4)	0 (0.0)	20 (18.5)
Occasionally	15 (22.1)	1 (2.5)	16 (14.8)
Never	1 (1.5)	2 (5.0)	3 (2.8)
Missing/prefer not to answer	8 (12.0)	19 (47.5)	27 (25.0)
Administers hepatitis B vaccine			
Always	14 (20.6)	0 (0.0)	14 (13.0)
Sometimes	25 (36.8)	0 (0.0)	25 (23.1)
Occasionally	19 (27.9)	0 (0.0)	19 (17.6)
Never	2 (2.9)	20 (50.0)	22 (20.4)
Missing/prefer not to answer	8	20 (50.0)	28 (25.9)
Discusses rubella vaccine			
Always	30 (44.1)	22 (55.0)	52 (48.1)
Sometimes	21 (30.9)	5 (12.5)	26 (24.1)
Occasionally	9 (13.2)	1 (2.5)	10 (9.3)
Never	4 (5.9)	3 (7.5)	7 (6.5)
Missing/prefer not to answer	4 (5.9)	9 (22.5)	13 (12.0)
Recommends rubella vaccine			
Always	27 (39.7)	24 (60.0)	51 (47.2)
Sometimes	20 (29.4)	2 (5.0)	22 (20.4)
Occasionally	10 (14.7)	0 (0.0)	10 (9.3)
Never	6 (8.8)	3 (7.5)	9 (8.3)
Missing/prefer not to answer	5 (7.4)	11 (27.5)	16 (14.8)
Administers rubella vaccine			
Always	15 (22.1)	0 (0.0)	15 (13.9)
Sometimes	21 (30.9)	0 (0.0)	21 (19.4)
Occasionally	14 (20.6)	0 (0.0)	14 (13.0)
Never	11 (16.2)	31 (77.5)	42 (38.9)
Missing/prefer not to answer	7 (1.5)	9 (17.5)	16 (14.8)
Discuss infant vaccines			
Always	19 (27.9)	26 (65.0)	45 (41.7)
Sometimes	28 (41.2)	0 (0.0)	28 (25.9)
Occasionally	12 (17.6)	0 (0.0)	12 (11.1)
Never	7 (10.3)	6 (15.0)	13 (12.0)
Missing/prefer not to answer	2 (2.9)	8 (20.0)	10 (9.3)
Recommend infant vaccines			
Always	15 (22.1)	18 (45.0)	33 (30.6)
Sometimes	33 (48.5)	4 (10.0)	37 (34.3)
Occasionally	10 (14.7)	0 (0.0)	10 (9.3)
Never	7 (10.3)	6 (15.0)	13 (12.0)
Missing/prefer not to answer	3 (4.4)	12 (30.0)	15 (13.9)

(Continues)

TABLE 3 (Continued)

Practice	Vaccinates in practice N = 68 (%)	Does not vaccinate in practice ^a N = 40 (%)	Total N = 108 (%)
Recommend alternatives to BC infant immunization schedule			
Always	0 (0.0)	2 (5.0)	2 (1.9)
Sometimes	1 (1.5)	3 (7.5)	4 (3.7)
Occasionally	3 (4.4)	4 (10.0)	7 (6.5)
Never	56 (82.4)	20 (50.0)	76 (70.4)
Missing/prefer not to answer	8 (11.8)	11 (27.5)	19 (17.6)

^aThree respondents did not indicate whether they administered vaccines and were included in the “does not administer” group.

TABLE 4 Reasons provided by British Columbia midwives for never or occasionally discussing or recommending perinatal vaccines with pregnant clients, 2018

Reason for not discussing vaccines	Influenza (N = 29)	Varicella (N = 26)	Rubella (N = 17)	Hepatitis B (N = 15)	Infant (N = 25)
I don't feel I have enough time	0 (0%)	0 (0%)	1 (5.9%)	0 (0%)	1 (4.0%)
I don't see this as within my scope of practice	5 (17.2%)	2 (7.7%)	4 (23.5%)	1 (6.7%)	4 (16.0%)
I don't want to pressure my clients/make them uncomfortable/I want to let my clients decide what is best for them	13 (44.8%)	8 (30.8%)	6 (35.3%)	3 (20%)	7 (28.0%)
I don't feel I have enough information	6 (20.7%)	6 (23.1%)	3 (17.6%)	2 (13.3%)	1 (4.0%)
I don't think the vaccine is safe (choice for maternal vaccines only)	3 (10.3%)	3 (11.5%)	2 (11.8%)	1 (6.7%)	N/A
I don't endorse the BC infant immunization schedule	N/A	N/A	N/A	N/A	1 (4.0%)

Note: Responses are not mutually exclusive. Percentage calculated on total for each column.

to the BC immunization schedule. A range of reasons were given with about half (n = 6, 46% of the subset or 6% of total sample) proposing alternative schedules for their clients who were already vaccine-hesitant and vaccine-resistant as an attempt to encourage vaccination and reduce harm, whereas just under half (n = 5, 38% of the subset or 5% of total sample) did not clearly support infant vaccines (ie, encouraged parents to do their own research and make their own decision) and a small minority (n = 2, 14% of the subset or 2% of total sample) advocated for naturopathic/homeopathic remedies in lieu of the standard infant vaccine schedule.

Reasons provided for never or occasionally discussing infant vaccines are shown in Table 4. The main reason for never or occasionally discussing infant vaccines was not wanting to pressure their clients or letting clients decide. For clients with questions about infant vaccinations, 47% (n = 51) referred their clients to information sources such as the BC Centre for Disease Control website (n = 32, 30%), local health authority websites (n = 29, 27%), BC Healthlink website files (n = 26, 24%), family doctor (n = 24, 22%), and Dr Sears' book and website (n = 24, 22%). Dr Sears' book and website were suggested almost equally by midwives who vaccinate

(n = 13) and midwives who did not vaccinate (n = 11). This group of midwives also referred clients to other, mainstream resources (family doctor, public health, etc.) and as one respondent in this group explained in a written comment after the closed-ended question: “I find most parents who have concerns about vaccines do not find websites/literature coming from the BC government very helpful or balanced. I think it would be useful to have simple pros and cons information available; it is not enough for some people to let them know it's recommended.”

Just over 20% (23/108) of midwives provided comments at the end of the survey to the prompt: “Please share anything you'd like to add about your practice, particularly in relation to vaccines.” Among these, 8% (9/108) wrote comments related to providing vaccine recommendations in an informed choice model. This appeared to be interpreted differently depending on the midwife. For example, one respondent stated: “I believe in informed choice so will present a client with their options, but talk at length about the benefits of vaccines and the lack of evidence for their risks, and risks associated with choosing to not vaccinate.” Another said: “My role as a midwife is to spend time

providing information to my clients and discussing their individual belief systems and values. I encourage my clients to do research and gather information and make their own decisions.”

4 | DISCUSSION

We believe this is the first survey to assess midwifery vaccination practices in BC. Over 60% of respondents administered vaccines, at least occasionally, indicating the majority were familiar and comfortable with providing some perinatal vaccines.

Our results reflect those found in other jurisdictions where midwife-attended births are common. In their review of midwifery vaccination attitudes, Attwell et al⁷ found a spectrum of vaccine acceptance among midwives, and jurisdictions where midwifery was regulated and integrated fostered more support for vaccination as compared to jurisdictions where midwifery was marginalized. In Canada, Dubé et al⁸ showed that both midwives in Quebec—where midwifery births account for fewer than 3% of all deliveries and the midwifery model of care is marginalized in favor of physician-attended births—and their clients were vaccine-hesitant. It is therefore not surprising that in BC, where midwifery is increasingly accepted, most (but not all) respondents were supportive of vaccination.

The fact that respondents who administered vaccines were significantly less likely to practice in urban areas in our study is noteworthy. This is different from what is seen with other practitioner types, such as family physicians, who are less likely to administer infant and toddler vaccines in nonurban areas.¹⁴ It may be the case that fewer community and public health support services provide perinatal vaccines in non-urban areas and/or that care is less integrated in more rural communities¹⁵ As such, midwives in these regions may be more likely to encompass vaccination in their scope of care. There could also be other differences between urban and non-urban midwife populations that were not observable using our survey tool.

According to survey respondents, the greatest barriers to vaccine provision were logistical constraints, followed by a perception that vaccine administration was not within the midwifery scope of practice. Logistical constraints in the form of time required for vaccine provision have also been cited as a barrier among family physicians in BC¹⁴ and among midwives in Australia.¹⁶

Not surprisingly, respondents who administered prenatal vaccines were significantly more comfortable discussing and recommending both prenatal and infant vaccines and more likely to recommend the BC infant vaccination schedule to their clients. This is in contrast to findings from Kaufman et al where Australian midwives reported being comfortable

discussing and recommending vaccines regardless of whether or not they vaccinated.¹⁶ These differences may be explained by the higher levels of acceptance and integration of midwifery in some regions of Australia as compared to Canada. Midwifery integration may provide support for, and foster confidence in, vaccination practices, even for those midwives who do not vaccinate. This finding may be of critical importance now both in and beyond Canada as nations work to make COVID-19 vaccines available to vast numbers of individuals.

Among midwives in our study who reported not discussing and recommending vaccines, not wanting to pressure clients or make them uncomfortable and/or wanting to let clients decide what is the best for themselves were the most frequently cited reasons. This mirrors findings from New Zealand and Quebec where concerns about affecting the therapeutic relationship, particularly with vaccine-hesitant or rejecting clients, have been cited as barriers to vaccine conversations.^{7,17}

For information sources recommended by midwives to clients with questions, the majority relied on resources such as family doctors and public health. However, a minority referred to Dr Sears' website and book, and this choice was not influenced by whether or not the midwife administered vaccines. From these data, it is not clear whether the client's preferences/vaccine opinions or the midwives' opinions guide the choice to refer to Dr Sears as these midwives also reported using more mainstream resources. Recommendations of such alternative information sources for parents with questions about vaccines merit further investigation as it is unclear how these resources affect vaccine behaviors for birthing people and their infants.

Finally, our study found that some midwives believed discussion and recommendation of vaccines was outside their scope of practice. It is unclear why some midwives did not regard vaccine provision to be in their scope of practice. As per the College of Midwives of BC (CMBC): “Pregnancy and related contact with a health care practitioner creates an opportunity to review a healthy individual's immunization status. The perinatal period is therefore an opportune time to assess for, offer and administer any indicated vaccines.”¹⁸ In BC, midwives are licensed to provide perinatal vaccines and one infant vaccine (hepatitis B). The CMBC instructs BC midwives to refer to the BC Centre for Disease Control Immunization Manual for the most up-to-date information, guidelines, and protocols. Although immunization training is provided for midwifery students at the University of British Columbia, continuing education on the subject is not readily available. A qualitative study in Australia identified shortcomings with current midwifery training on immunization, and the need for immunization training that encompasses the central tenets of midwifery practice, yet is still effective at achieving vaccine acceptance among midwifery clients.¹⁹ Our study highlights a need for this as well.

Our study has several limitations. Although we did contact all practicing BC registered midwives, our response rate was low, at just under 40%. Therefore, our results may not be representative of all BC midwives. Moreover, midwifery varies substantially among jurisdictions, and our results may not be generalizable to midwives practicing in other provinces, particularly in provinces or jurisdictions where midwifery is viewed as alternative or more marginalized. We did not assess each respondent's attitudes toward, or knowledge of, vaccination. Therefore, we were unable to classify respondents in these areas.^{7,13}

In the free-text fields that followed each vaccination practice question, we received written comments from a handful of midwives describing the ways they follow informed choice processes when discussing vaccines; however, our questions did not expressly ask about vaccination practices within the context of an informed choice perspective. This mirrors Lee et al's study from almost twenty years ago wherein Ontario midwives also wrote additional comments about vaccine recommendations framed using an informed choice model.⁹ This concept still resonated with our participants. According to the CMBC, informed choice is an interactive process that "involves the promotion of shared responsibility between the midwife and her client. It is the responsibility of the midwife to facilitate the ongoing exchange of current knowledge in a non-authoritarian and co-operative manner, including sharing what is known and unknown about procedures, tests and medications."²⁰ We recommend future research further explore the question of how midwives understand and enact informed choice in relation to vaccination and how vaccines are (or are not) discussed and recommended within the context of informed choice care processes. Our study also emphasizes that there is work to be done to more fully operationalize the critical role midwives can play in vaccine conversations and access. Current evidence suggests that more thorough integration of midwives into existing maternity care systems across Canada and elsewhere is an important starting point.

4.1 | Conclusions

Our results indicate that the majority of BC midwives are comfortable with discussing and administering vaccinations to pregnant people and their infants. However, some BC midwives are not, and they are a potential untapped resource for ensuring pregnant people and their infants are well informed about the benefits of vaccines against vaccine-preventable diseases. Many of the respondents to this survey provide services to people who are already vaccine-hesitant; thus, midwives can serve as valuable and trusted resources for this group who may not otherwise interact with allopathic care practitioners. Our survey highlighted key areas of focus needed to strengthen midwifery capacity to discuss,

recommend, and provide perinatal and infant vaccines. Given the low vaccination coverage in many jurisdictions for both perinatal and infant vaccines, health authorities, in collaboration with midwives, should explore strategies to support vaccine discussion, recommendation, and administration by midwives.

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ETHICAL APPROVAL

The University of British Columbia provided research ethics approval (H17-03340).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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ENDNOTE

¹ In BC, hepatitis B vaccine is indicated at birth for infants who are born to hepatitis B-positive persons. Otherwise, the vaccine is given universally to infants starting at 2 months of age.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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