



## Research Article

# Healthcare Providers Perspectives on Firearms in Their Rural and Urban Communities and What They Need to More Effectively Counsel Patients on Gun Safety: A Mixed Methods Study

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## Abstract

**Objectives:** Gun violence is a leading cause of death in the U.S. with more than 38,000 deaths and nearly 85,000 injuries each year. We conducted a mixed methods study of firearm safety with a weighted

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sample of allopathic/osteopathic physicians, physician assistants, and nurse practitioners.

**Methods:** A 53-item survey asked clinicians about: 1) Demographics and practice; 2) Firearms in their community; and 3) Experiences with firearms and firearm safety. A total of 589 participants responded. We conducted focus groups with 22 clinicians.

**Results:** Survey participants estimated 44%-49% households in their communities have firearms, and a lack awareness exists among patients about established programs to prevent firearm injuries, including emergency gun storage and free gunlocks. Over 60% (61.6%) reported treating firearm injuries. Many injuries were crime related (33.6%), accidental shootings (31%) or self-harm (15.7%). Over 70% of respondents (70.3%) reported they had not been trained to counsel patients on firearm injury prevention; training was desirable (50.3%), and online training programs (47.4%) were favored. Focus group findings indicate that healthcare providers interact with patients where both the potential and actual effects of firearm violence are real; however, little knowledge exists about best practices for intervening to prevent firearm violence. Most providers had discussed the risks of firearms with some patients, but were doing so on an ad hoc basis.

**Conclusion:** Firearm safety is perceived as important among primary care clinicians, though more intervention studies are needed on how best to better prepare them to address this topic with their patients and their communities.

**Keywords:** Community health; Firearm safety; Gun violence primary care

## Introduction

Gun violence is a leading cause of premature death in the U.S. with more than 38,000 death and nearly 85,000 injuries each year [1]. A sharp increase in U.S. gun deaths occurred in 2021, rising to 44,319, of which 53.9% were related to suicide and 46.1% related to homicide or accidental shootings [2]. These recent trends underscore the extent to which gun violence has become a public health crisis, and physician groups including the American Medical Association are calling for increased efforts to address gun safety [3].

Despite this concerning situation, we found rather sporadically published literature on healthcare provider beliefs and practices related to firearm safety. Three older studies published in the late 1990s found a high percentage of physicians believed they should provide counseling, though a small percent actually did [4,5]. A more recent study of U.S. Veterans revealed how unlikely it was to document in medical records that patients were screened for firearm access and impulsivity [6]. Surveys of internists, pediatricians and family physicians indicate these healthcare clinicians expressed concerns about firearms and favor preventive measures, while also indicating more should be done to foster gun control, such as firearm safety counseling [7-10]. We found two papers that reported on nurses' perceptions, but neither of them included nurse practitioners (NPs) in the study samples and we found no published papers on physician assistants (PAs) [11,12].

We found even fewer papers on intervention studies designed to stem gun violence. One case-control study found that safe firearm storage devices and practices were protective against both youth suicide and unintentional firearm injuries [13]. However, clinically delivered interventions to improve firearm safety show mixed results. Stevens et al. [14] concluded that except for bicycle helmet use, there were no significant effects of any injury-prevention interventions in pediatric practices, including safe gun storage, while a study by Johnsona et al. [15] Found that firearm safety training among pediatricians improved physicians' comfort with patient counseling. Grossman and colleagues [16] examined the effect of gun counseling in pediatric settings among physicians, nurse practitioners, and physician assistants. They found no meaningful differences in acquisition of new guns by their patients, or removal of firearms from the home, but did observe an increase in the proportion of their patients that purchased gun locks (8% in the intervention group, versus 2.5% among controls). A randomized controlled trial (information only vs. counseling), found a substantial increase in storing firearms with cable locks for the intervention group, compared to a decrease in the control group [17].

Given these sporadic and sparse published reports and limited regional data, we undertook a mixed methods study to understand Oregon (OR) healthcare providers' experiences with gun safety. First, we surveyed a random sample of three types of healthcare providers (physicians, physician assistants and nurse practitioners) to understand their clinical experiences with firearm injuries, determine past training regarding firearm safety, and determine their perspectives on the role they believe they should play in firearm safety. Second, we conducted a set of focus groups to understand the role, challenges, and opportunities physicians and other healthcare providers (physician assistants, nurse practitioners) experience when intervening and preventing violence linked to firearms. The purpose of this paper is to report our findings.

## Methods

### Survey study design and population sample

We identified a weighted sample of 6,972 physicians (from 13,900 allopathic/osteopathic physicians), physician assistants (from 1,800), and nurse practitioners (from 3,200) from the Oregon Medical Association (OMA) and the Oregon State Board of Nursing (OSBN). We excluded dentists, podiatrists, naturopaths, chiropractic physicians, and non-nurse practitioner nurses. Physician specialties with limited direct clinical patient interactions were excluded (e.g., nuclear medicine). The OMA provided contact information on licensed MDs, DOs, and PAs, and OSBN provided contact information nurse practitioners. Both associations and OHSU completed Letters of Agreement. We selected a random sample of providers based on disciplines using sampling frameworks included in Supplemental Digital Information I & II.

### Survey design and development

Using existing literature, we developed a 53-item survey with information on: 1) Demographics and practice; 2) Firearms in your community; and 3) Experiences with firearms and firearm safety. To optimize response rates, survey response time was about 10 minutes. We completed four rounds of cognitive interviews [18] to test the survey before finalizing it.

Physician Medical Specialties (American Board of Medical Specialties)†	Included (Yes/No)	Rationale for Exclusion	Weights
Allergy and Immunology (n=40) n=12	Yes		*
Anesthesiology	No	Limited patient interaction	--
Colon and Rectal Surgery (n=16) n=5	Yes		*
Dermatology (n=220) n=66	Yes		*
Emergency Medicine (n=1006) n=604	Yes		***
Family Medicine (n=2395) n=1078	Yes		**
Internal Medicine (n=2630) n=1184	Yes		**
Medical Genetics and Genomics	No	Patient care spectrum too narrow	--
Nuclear Medicine	No	Patient care spectrum too narrow	--
Neurology (n=246) n=74	Yes		*
Neurological Surgery (n=160) n=48	Yes		*
Obstetrics and Gynecology (n=617) n=185	Yes		*
Ophthalmology (n=350) n=105	Yes		*
Otolaryngology – Head and Neck Surgery (n=266) n=120	Yes		**
Orthopedic Surgery (n=591) n=266	Yes		**
Pathology	No	Limited patient interaction	--
Pediatrics (n=976) n=293	Yes		*
Physical Medicine and Rehabilitation (n=137) n=62	Yes		**
Plastic Surgery (n=90) n=41	Yes		**
Preventive Medicine (n=22) n=13	Yes		***
Psychiatry (n=42) n=19	Yes		**
Radiology	No	Limited patient interaction	--
Surgery (n=3) n=2	Yes		***
Thoracic Surgery (n=69) n=31	Yes		**
Urology (n=183) n=55	Yes		*

**Supplemental Digital Information I:** Physician and Physician Assistant Sampling Framework for Firearm Survey.

†Sampling could change based on # represented in Oregon Random sample 30% of disciplines with \*.

Random sample 45% of disciplines with \*\* Random sample 60% of disciplines with \*\*\*

Nurse Practitioner Specialties According to the OSBN	Include (Yes/No)	Rationale for Exclusion	Weights
Acute (n=86 or 2%) n=52	Yes	N/A	***
Adult (n=347 or 7.5%) n=156	Yes	N/A	**
Adult-Gerontology Acute Care (n=87 or 2%) n=26	Yes	N/A	*
Adult-Gerontology Primary Care (n=131 or 2.8%) n=59	Yes	N/A	**

Family (n=2,532 or 54.7%) n=1,139	Yes	N/A	**
Geriatric (n=35 or 1%) n=16	Yes	N/A	**
Neonatal (n=62 or 1%) n=19	Yes	N/A	*
Nurse midwife (n=361 or 8%) n=162	Yes	N/A	**
Pediatric (n=123 or 2.7%) n=55	Yes	N/A	**
Pediatric acute care (n=11 or <1%)	No	Group too small for meaningful data	--
Pediatric Primary Care (n=51 or 1%) n=23	Yes	N/A	**
Psychiatric/Mental Health (n=676 or 14.6%) n=304	Yes	N/A	**
Women's health (n=127 or 2.7%) n=57	Yes	N/A	**
Total (n=4,629) n=2,073 or 44.8% overall			

**Supplemental Digital Information II: Nurse Practitioner Sampling Framework for Firearm Survey.**

Random sample 30% of disciplines with \* Random sample 45% of disciplines with \*\* Random sample 60% of disciplines with \*\*\*

**Recruitment activities and survey administration**

We contacted prospective participants with e-mails that described the survey study and included a link to the Qualtrics online survey. OHSU's Institutional Review Board approved all study activities (IRB #19714). Four participant contacts were undertaken between October 22, 2019 and March 16, 2020.

**Survey data analyses**

We used Analysis of Variance (ANOVA) mixed models to assess continuous variables, and Chi Square to assess categorical variables. All tests were two-sided, and alpha was set at 0.05 to assess statistical significance. Missing information was less than 5%. Data table cells with a count under five were censored (to prevent possible identification of participants). Analyses were conducted using IBM SPSS v28.

**Focus group methods**

We held four focus groups with 22 providers (15 MDs/DOs, 4 PAs, 3 NPs) between July 10, 2019 and December 16, 2019; two in rural Oregon, and two in Portland. Focus groups lasted between 56 and 70 minutes. The majority of participants had been in practice for between 11 and 30 years, was white, and was equally divided by rural or urban practice locations. Interviews were recorded, transcribed, and uploaded into MAXQDA (VERBI Software, Berlin Germany). We iteratively coded transcripts to reveal a set of eleven primary codes. The qualitative research team collectively reviewed codes and came to consensus on presence and frequency. For confidentiality, excerpts reported here have identifying information de-identified (noted by [brackets]). Focus group activities were approved by OHSU's IRB (IRB #20046).

**Results**

**Provider survey response rates and participants**

A total of 5,563 surveys were administered and 589 participants completed it (10.6% response rate) (Table 1). Mean respondent age was 48.6 years (range: 28-82). The sample was majority White (84.3%), non-Hispanic (96.5%), slight majority female (51.4%), and slight majority children living at home (55.2%) (Table 2).

Participants estimated 44%-49% households in their catchment areas have firearms of different types and purposes (Table 3). Providers reported a lack awareness of existing programs to prevent firearm injuries, including emergency gun storage, free gunlocks, and cables, and perceived that all gun types were more likely to be owned in rural settings; awareness of gun safety programs/devices was perceived as more accessible in urban settings. Over 60% (61.6%) reported treating firearm injuries, which was more common among physicians (Table 4). Many injuries were related to crime (33.6%), accidental shootings (31%), and self-harm (15.7%).

Type of Health-care Provider	Number (n)(Column %)	Full Survey Responses n (Row %)	Partial Survey Responses n (Row %)
MD/DO	441 (74.9%)	340 (77.1%)	101 (22.9 %)
NP	121 (20.5%)	87 (71.9%)	34 (28.1%)
PA	27 (4.6%)	19 (70.4%)	8 (29.6%)
<b>TOTALS</b>	<b>589 (100%)</b>	<b>446 (100%)</b>	<b>143 (100%)</b>

**Table 1: Gun Safety Survey Response Rates According to Type of Health-care Provider.**

Provider Characteristics	All	MD/DO	NP	PA	p value
	Number - n (%)				
Mean Age (±Standard deviation) Range	<u>n=573</u> 48.6 (11.7) 28-82	<u>n=430</u> 48.8 (11.9) 29-82	<u>n=118</u> 48.0 (11.5) 28-68	<u>n=25</u> 47.1 (9.7) 34-68	0.64
Gender Identity	<u>n=588</u>	<u>n=440</u>	<u>n=121</u>	<u>n=27</u>	<0.001
Male	272 (46.3)	247 (56.1)	15 (12.4)	10 (37.0)	
Female	302 (51.4)	180 (40.9)	105 (86.8)	17 (63.0)	
Genderqueer/ Gender non-conforming	...	...	...	...	
Prefer not to answer	10 (1.7)	9 (2.0)	...	...	
Prefer to describe (text)	...	...	...	...	
Race	<u>n=586</u>	<u>n=438</u>	<u>n=121</u>	<u>n=27</u>	0.02
White	494 (84.3)	366 (83.6)	104 (86.0)	24 (88.9)	
Black	...	...	...	...	
Asian or Pacific Islander	39 (6.7)	30 (6.8)	9 (7.4)	...	
American Indian/ Native Alaskan	...	...	...	...	
Two or more races	13 (2.2)	10 (2.3)	...	...	
Others	7 (1.2)	5 (1.1)	...	...	
Prefer not to answer	28 (4.8)	25 (5.7)	...	...	
Ethnicity	<u>n=566</u>	<u>n=421</u>	<u>n=118</u>	<u>n=27</u>	0.48
Hispanic	21 (3.7)	17 (4.0)	...	...	
Non-Hispanic	546 (96.5)	404 (96.0)	116 (98.3)	26 (96.3)	

<i>Parental Status</i>					
Has children living at home (% Yes)	n=585 323 (55.2)	n=439 252 (57.4)	n=119 54 (45.4)	n=27 17 (63.0)	0.05

**Table 2:** Participant Demographic Characteristics.

Cell contains less than 5 respondents

Perspectives Regarding Firearm Use	All	MD/DO	NP	PA	p value
<i>Estimated percent of households in your practice catchment area that have firearms</i>	n=326 Mean (SD)45.7 (27.5)	n=239 Mean (SD)44.3 (26.9)	n=69 Mean (SD) 49.8 (29.3)	n=18 Mean (SD) 49.2 (28.3)	0.30
Unable to estimate this number	n=219 40.2%	n=163 40.5%	n=49 23.1%	n=7 28.0%	
<i>Estimate of the types of firearms owned *</i>	n=589 n (%)	n=441 n (%)	n=121 n (%)	n=27 n (%)	
Handguns	268 (45.5)	207 (46.9)	51 (42.1)	10 (37.0)	0.43
Rifles	258 (43.8)	199 (45.1)	47 (38.8)	12 (44.4)	0.47
Shotguns	215 (36.5)	163 (37.0)	42 (34.7)	10 (37.0)	0.90
Air gun	60 (10.2)	51 (11.6)	7 (5.8)	2 (7.4)	0.16
Don't know	178 (30.2)	125 (28.3)	45 (37.2)	8 (29.6)	0.17
Other	11 (1.9)	8 (1.8)	2 (1.7)	1 (3.7)	0.77
<i>Estimate of firearm purpose *</i>	n=589 n (%)	n=441 n (%)	n=121 n (%)	n=27 n (%)	
Hunting	328 (55.7)	245 (55.6)	68 (56.2)	15 (55.6)	0.99
Personal protection	320 (54.3)	238 (54.0)	67 (55.4)	15 (55.6)	0.96
Recreational target shooting	237 (40.2)	182 (41.3)	45 (37.2)	10 (37.0)	0.66
Gun collecting	166 (28.2)	129 (29.3)	30 (24.8)	7 (25.9)	0.61
Don't know	139 (23.6)	101 (22.9)	33 (27.3)	5 (18.5)	0.49
Other	11 (1.9)	9 (2.0)	1 (0.8)	1 (3.7)	0.53
<i>Awareness of existing programs:</i>	n=486	n=362	n=103	n=21	
<i>Emergency Gun Storage</i>	n (%)	n (%)	n (%)	n (%)	
Yes, this exists	64 (13.2)	48 (13.3)	15 (14.6)	1 (4.8)	0.56
No, this does not exist	34 (7.0)	24 (6.6)	7 (6.8)	3 (14.3)	
I don't know whether this exists	388 (79.8)	290 (80.1)	81 (78.6)	17 (81.0)	
<i>Awareness of existing programs:</i>	n=485	n=362	n=102	n=21	
<i>Free Child Safe Gun Locks</i>	n (%)	n (%)	n (%)	n (%)	
Yes, this exists	138 (28.5)	105 (29.0)	27 (26.5)	6 (28.6)	0.77
No, this does not exist	15 (3.1)	13 (3.6)	2 (2.0)	0 (0)	
I don't know whether this exists	332 (68.5)	244 (67.4)	73 (71.6)	15 (71.4)	

<i>Awareness of existing programs: Tom</i>	n=482	n=358	n=103	n=21	
Sargent Ctr. Free Gun Cable Locks	n (%)	n (%)	n (%)	n (%)	
Yes, this exists	44 (9.1)	35 (9.8)	8 (7.8)	1 (4.8)	0.86
No, this does not exist	15 (3.1)	10 (2.8)	4 (3.9)	1 (4.8)	
I don't know whether this exists	423 (87.8)	313 (87.4)	91 (88.3)	19 (90.5)	

\* Categories not mutually exclusive

**Table 3:** Healthcare Providers Perspectives Regarding Firearm Use.

Preferred Educational Programming *	All	MD/DO	NP	PA	P value
<i>What educational content areas would help you address firearm injury prevention?</i>	n=589 n (%)	n=441 n (%)	n=121 n (%)	n=27 n (%)	
How to identify at risk patients & families	269 (45.7)	197 (44.7)	59 (48.8)	13 (48.1)	0.71
How to counsel/educate high-risk patients/families on gun safety to help reduce their risk.	296 (50.3)	215 (48.8)	69 (57.0)	12 (44.4)	0.23
Specific information on laws & restrictions on gun ownership	278 (47.2)	210 (47.6)	56 (46.3)	12 (44.4)	0.91
Specific information on firearm handling and storage	256 (43.5)	189 (42.9)	55 (45.5)	12 (44.4)	0.87
Having a better understanding of firearm owner culture & how best to approach patients on this topic	245 (41.6)	179 (40.6)	57 (47.1)	9 (33.3)	0.29
<i>What types of educational approaches work best for you?</i>	n=589 n (%)	n=441 n (%)	n=121 n (%)	n=27 n (%)	
In person sessions with guest speakers	235 (39.9)	163 (37.0)	57 (47.1)	15 (55.6)	0.03
Webinar/Online programs	279 (47.4)	207 (46.9)	60 (49.6)	12 (44.4)	0.95
Other	45 (7.6)	40 (9.1)	...	...	0.08

\* Respondents checked all that apply

**Table 4:** Preferred Educational Programming for Healthcare Provider.

Over 70% of respondents (70.3%) reported their training did not include how to counsel patients on firearm injury prevention (*data not shown*). Nearly 34% reported owning a firearm, and 75% reported on the importance of a federal plan to prevent firearm related violence (*data not shown*). Providers reported that top issues preventing them from counseling patients were lack of time (26.3%) or patients not being open to counseling (17.8%). Learning about counseling/educating high-risk patients/families on gun safety to help reduce their risk was desirable (50.3%), and webinars or online programs (47.4%) were

avored for educational processes. The full Report and Recommendations on Firearm Safety in Oregon is available [19].

### Focus group findings

Our most critical finding was that Oregon healthcare providers interact with patients where both the potential and actual effects of firearm violence are real; however, little knowledge exists among health care providers about best practices for intervening to prevent firearm violence. Most rural providers assumed that the majority of their patient population had firearms and did not keep them locked and separate from ammunition [20]. Most providers had discussed the risks of firearms with some patients, but were doing so on an ad hoc basis, according to their own instinct and experience and were not using evidence-based protocols. The following thematic results highlight challenges with these interactions.

### Conversations shut down, are uncomfortable, and can lead to distrust

Many participants told us the biggest challenge to talking with patients about firearms is that conversations were uncomfortable and/or can lead to animosity between themselves and their patients. Here is one example, among many:

Speaker: "I don't find [the conversation about firearms] goes great".

Researcher: "Okay, so, tell me how it doesn't go great".

Speaker: Anger, "You're not taking my gun away," "I'm not locking up my gun,"

... "You're trying to take my gun. ... or, "You don't like guns."

### Lack of training

Providers report talking with patients about firearms and firearm safety; however, no focus group participants had any formal training on how to do so. Most providers who were talking with patients about firearms were inventing intervention language, loosely linked to data about firearm risk.

### The culture gap

We found some providers felt a distinct culture gap surrounding rural firearm owners that exacerbated an already challenging conversation. One participant said the following: "I think from a personal training standpoint, sometimes that it'd be really helpful to me being a somewhat new Oregonian to have a hunter come and just talk to me about their guns, ... like what they mean to them, what they do with them, what is the hunting season? Like, just how it all works, I don't get it ... I really don't get it. So, it makes it hard for me to have that conversation." When physicians lack the cultural competency to talk to rural firearm owners in Oregon, the conversation may be more volatile.

### Lack of data

Multiple providers indicated that lack of data and lack of clear protocols resulted in hesitancy to have a conversation with their patients about firearms. One participant said: "The motivation to have the hard conversations, I think, is comparable to quitting smoking or quitting drug use. Those can be unpleasant conversations, but I know there's data backing me up that every time you approach, every time you bring it up in the right way, you increase your chances of stopping. ... I don't have that data for guns, or I'm not aware of any."

### Lack of next steps

Other providers pointed out that often no protocol exists on what to do if a patient said they did NOT store their firearm in a safe place, or did NOT intend to remove it in case of suicidal ideation. One participant said, "If I don't have a way to then act on that information, then why am I asking the question in the first place?"

### Lack of time

Lack of time to initiate challenging conversations about firearms was reported. Some providers questioned the ability of a provider to handle all safety issues or risks with which a patient might come into contact.

### Firearms as trust building

Interestingly, there was one category of experience that came up in every focus group, which demonstrated positive outcomes of firearms as a shared cultural object. For providers who owned a firearm, or had experience with firearms, talking to patients about their firearms was a) easier; and b) was a trust building exercise, likely because of shared knowledge on this topic.

### Discussion

The survey portion of this study included 589 Oregon healthcare providers, one of the larger such surveys in the U.S. to date. While the response rate was low (10.6%, despite multiple contacts), the results are useful in describing limited prior training for firearm safety, if any, among health care providers, which if they had received could help them counsel their patients. The majority of healthcare providers reported not assessing whether their patients or families would benefit from firearm injury prevention, yet expressed interest in having these skills. Injury prevention and health promotion are traditional parts of provider-patient visit conversations.

Most respondents thought that developing a practice-based protocol to address firearm injury prevention with patients would be helpful to them: examples are electronic health records, or flow sheets. To achieve a reduction in firearm injury based on healthcare providers, Oregon public health officials could develop an Oregon-centric public health program with a strong central planning and evaluation component, and include free and responsive provider training and substantial access to other resources (e.g., gunlocks and firearm safes).

There is much to be learned about firearm safety and the role healthcare providers could and should play in these efforts. A survey of internists [7] found a majority expressed concerns about firearms and favored stricter gun control legislation with 66% believing physicians should counsel patients, though 58% reported they never ask patients about guns in their homes. The American Academy of Pediatrics (AAP) routinely surveys their delegates on experiences treating gun injuries, counseling practices, and views on gun injury prevention and found that 90% or more reported that violence prevention should be a pediatric priority (8, 10). Importantly, a 2019 paper published in the *Annals of Internal Medicine* provides evidence-based guidelines on how to initiate and carry-on firearm safety discussions among patients who do and do not own firearms and reveals what to do if risks are especially concerning [21].

There is also much to understand about how the healthcare community, specifically, is responding to firearm-related violence. It was particularly noteworthy to us that, in Oregon, rural/urban divide

issues loom large in understanding the nature of firearms in people's lives. These cultural issues come to the forefront when providers and patients discuss firearms and there is potential to alienate firearm-owning patients if this conversation goes poorly. This project helps to lay out categories of experience physicians and other healthcare provider have related to firearm safety interventions; and describes the central challenges present in those experiences. Future research could be directed at understanding and testing strategies to mitigate those challenges.

While our mixed methods study provided comprehensive information on providers reactions to firearm safety in Oregon, several limitations exist, including our low response rate for the survey. Based on existing peer-reviewed literature, we recognized that survey response would be a challenge for our study. For example, Butkus and Weisman [7] reported 56.5% response from internists at the national level. Hersh and Goldenberg [22] sent surveys to 1,529 primary care physicians in 29 states with 20% response. The AAP reported decreasing response: 69% in 1994 dropping to 44% in 2013. In general, survey response rates (via paper or online) have decreased.

Because of the limited published success with provider surveys, we adopted several strategies to improve response rate. First, we used current email addresses as a first-line (low cost) web-based survey delivery mode. We followed with more intensive efforts using regular mail methods. Second, we limited our Oregon State provider survey population to physicians and two larger groups of advanced practice providers: PAs and NPs. This reduced the potential for small subgroups where we might not be able to interpret data accurately. Third, we used a sampling strategy to survey a smaller but representative sample of providers, to maximize our efforts of increasing response with more intensive follow-up in a smaller sample. We used a weighted sampling frame, where smaller groups (e.g., preventive medicine physicians; acute care NPs) were randomly sampled at a higher rate, e.g., 60% of their number, and larger groups (e.g., pediatric physicians) were sampled at 30% of their number. In total, we sampled almost 5,000 healthcare providers in these groups out of about 19,000 licensed members of these professions. Finally, we collaborated with the OMA, whose support included their logo on our survey invitations. The OMA members, including the Vice President of Practice Advocacy, and Members of the OMA Firearm Injury Prevention Task Force also developed a deep interest in firearm safety, and helped develop and legitimize the survey. A significant contributing factor was that we were surveying healthcare providers at the beginning of the COVID pandemic, which also affected our response rate. It is low enough to not fully represent healthcare providers in OR and thus limits the generalizability of our findings.

Focus groups were limited by sample size. We did not have an adequate sample size to fully determine differences among different kinds of providers. While focus group data were remarkably consistent, the limited number of focus groups also meant we did not capture perspectives across all areas of the state or account for differences between specific communities.

## Conclusion

Firearm safety is perceived as important among the primary care clinicians who participated in this study, though more efforts are needed to better prepare them to address this topic with their patients and in their communities. Education on this topic should be added to health professions training and additional training sessions should be

included in continuing education programs for clinicians currently in practice.

## References

1. <https://www.apha.org/topics-and-issues/gun-violence>.
2. <https://www.gunviolencearchive.org/past-tolls>.
3. Jones N, Nguyen J, Strand NK, Reeves K (2018) What Should Be the Scope of Physicians' Roles in Responding to Gun Violence? *AMA Journal of Ethics* 20: 84-90.
4. Barkin S, Duan N, Fink A, Robert H, Gelberg L, et al. (1998) The Smoking Gun: Do Clinicians Follow Guidelines on Firearm Safety Counseling? *Archives of Pediatrics & Adolescent Medicine* 152: 749-756.
5. Everett SA, Price JH, Bedell AW, Tellijohann SK (1997) Family Practice Physicians' Firearm Safety Counseling Beliefs and Behaviors. *Journal of Community Health* 22: 313-324.
6. Simons K, Van K, Conner KR, Bagge C (2019) Age Differences in Suicide Risk Screening and Management Prior to Suicide Attempts. *Am J Geriatr Psychiatry* 27: 604-608.
7. Butkus R, Weissman A (2014) Internists' attitudes toward prevention of firearm injury. *Annals of Internal Medicine* 160: 821-827.
8. Olson LM, Christoffel KK, Connor KG (1997) Pediatricians' experience with and attitudes toward firearms: results of a national survey. *Archives of Pediatrics & Adolescent Medicine* 151: 352-359.
9. Thai J, Saghir H, Pokhrel P, Post RE (2021) Perceptions and experiences of family physicians regarding firearm safety counseling. *Family Medicine* 53: 181-188.
10. Olson LM, Christoffel KK, Connor KG (2007) Pediatricians' involvement in gun injury prevention. *Injury Prevention* 13: 99-104.
11. Sheppard KS, Hall K, Carney J, Griffith C, Rudolph M, et al. (2020) Nurses' knowledge and comfort with assessing inpatients' firearm access and providing education on safe gun storage. *AJN the American Journal of Nursing* 120: 26-35.
12. Wolf LA, Delao AM, Perhats C, Clark PR, Moon MD, et al. (2019) Emergency nurses' perceptions of risk for firearm injury and its effect on assessment practices: A mixed methods study. *Journal of Emergency Nursing* 45: 54-66.
13. Grossman DC, Mueller BA, Riedy C, Dowd MD, Villaveces A, et al. (2005) Gun storage practices and risk of youth suicide and unintentional firearm injuries. *JAMA* 293: 707-714.
14. Stevens MM, Olson AL, Gaffney CA, Tosteson TD, Starret P, et al. (2002) A pediatric practice based randomized trial of drinking and smoking prevention and bicycle helmet gun, and seatbelt safety promotion. *Pediatrics* 109: 490-497.
15. Johnsona RM, Kotch JB, Catellier DJ, Winsor JR, Dufort V, et al. (2002) Adverse behavioral and emotional outcomes from child abuse and witnessed violence. *Child Maltreatment* 7: 179-186.
16. Grossman DC, Cummings P, Koepsell TD, Marshall J, Ambrosio LD, et al. (2000) Firearm safety counseling in primary care pediatrics a randomized controlled trial. *Pediatrics* 106: 22-26.
17. Barkin SL, Finch SA, Ip EH, Scheindlin B, Craig JA, et al. (2008) Is Office-Based Counseling About Media Use, Timeouts, and Firearm Storage Effective? Results from a Cluster-Randomized, Controlled Trial. *Pediatrics* 122: e15-e25.
18. Willis G (2005) *Cognitive Interviewing: A Tool for Improving Questionnaire Design*. SAGE Publications.
19. (2021) Report and Recommendations on Firearm Safety in Oregon Results of Multiple Methods of Literature Review Analysis of Existing Data and Original Data from Oregon Healthcare Provider Qualitative and Quantitative Projects.
20. Marino E, Wolsko C, Keys S, Wilcox H (2018) Addressing the cultural challenges of firearm restriction in suicide prevention a test of public health messaging to protect those at risk. *Archives of Suicide Research* 22: 394-404.

21. Pallin R, Spitzer SA, Ranney ML, Betz ME, Wintemute GJ (2019) Preventing firearm-related death and injury. *Annals of Internal Medicine* 170: ITC81-ITC96.
22. Hersh ED, Goldenberg MN (2016) Democratic and Republican physicians provide different care on politicized health issues. *Proceedings of the National Academy of Sciences* 113: 11811-11816.



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