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“Vaccination needs to be easy for the people, right ?” : A Qualitative Study Examining the Roles of Physicians and Pharmacists Regarding Vaccination Counseling and Administration in Switzerland

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22 ABSTRACT

23 **Objective** The aim of this qualitative study was to gain further insight into professional stakeholders'
24 perspectives on vaccination counselling and administration conducted in pharmacies and to further
25 understand their views on physicians' and pharmacists' roles in increasing immunization rates.

26 **Design** We conducted semi-structured qualitative interviews. We coded and analyzed transcripts
27 using thematic analysis.

28 **Setting** Face-to-face interviews took place in German- and French-speaking regions of Switzerland.

29 **Participants** We interviewed 14 key vaccination stakeholders including health authorities, heads of
30 pharmacy management, and professional association boards. All participants had a medical or
31 pharmaceutical background.

32 **Results** Three main themes emerged from the qualitative data: (1) Participants viewed pharmacists
33 as competent to provide vaccination counseling and administration based on their university
34 training; (2) inter-professional cooperation between physicians and pharmacists on vaccination
35 topics is limited and should be improved; and (3) pharmacists play an important role in increasing
36 immunization rates by facilitating vaccination access and through provision of vaccination
37 counseling.

38 **Conclusion** By providing vaccination counseling and administering vaccines, pharmacists play an
39 important public health role. Healthcare policies and health authorities should encourage more
40 involvement of pharmacists and encourage inter-professional cooperation between physicians and
41 pharmacists in order to improve vaccination counseling and increase immunization rates.

42 **Keywords:** Vaccination, Immunization Rates, Pharmacist, Physician, Stakeholder, Inter-
43 professionalism

44 STRENGTHS AND LIMITATIONS OF THIS STUDY

- 45 1. The qualitative study design provides novel insights into the opinions of key Swiss experts
46 with both medical and pharmaceutical backgrounds and allows us to gain a deeper
47 understanding of the topic of vaccination in pharmacies from the participants' own
48 perspectives.
- 49
50 2. This study includes detailed insights into the views of a wide variety of key actors, by
51 including stakeholders from German- and French-language regions of Switzerland, from
52 public health, professional pharmacists and physicians organisations, and complementary
53 medicine and biomedicine.
- 54
55 3. The methodological approach to recruit only key Swiss experts on vaccination topics limits
56 our results, because practicing physicians and pharmacists are under-represented in our
57 study.
- 58
59 4. Our results reflect the opinions of a limited number of experts and should be generalized
60 with caution.

62 INTRODUCTION

63 Despite generally high vaccination rates in Switzerland, the Swiss Federal Office of Public Health
64 (FOPH) has reported that vaccination coverage is not currently meeting public health targets to
65 protect the population against measles, human papillomavirus (HPV), and influenza. [1-3] Insufficient
66 immunization rates are not always simply a result of negative attitudes towards vaccination, a lack of
67 reliable information, or vaccine hesitancy (VH); they can also result from inadequate access to

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3 68 vaccination services. [4-8] For example, hard-to-reach populations, such as healthy adolescents with
4
5 69 no primary care physician, are often missed by healthcare systems. [9] Pharmacists have been
6
7 70 involved in vaccination for many years. [10] With their extended business hours and walk-in services,
8
9 71 pharmacies offer easy access to health care providers and immunization delivery. [11, 12] In recent
10
11 72 years, pharmacists in certain Western countries have become involved in offering vaccination
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13 73 services by serving as vaccination advocates, facilitators and immunizers. [5, 13-16]
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17 74 Vaccination in pharmacies can increase access to immunizations and improve vaccination counseling.
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19 [16, 17] For these reasons, pharmacists have been allowed and are encouraged to administer certain
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21 75 vaccines as a key component of the 2015 Swiss National Vaccination Strategy. [4, 8] Additionally,
22
23 76 pharmacists are now increasingly expected to provide preventive health services, having been
24
25 77 attributed this role in the Swiss national law of medical professions. [18-20] In 22 of the 26 Swiss
26
27 78 cantons (states), community pharmacists can currently administer vaccines (Table 1-Supplemental
28
29 79 Material). [21] This requires (since 2011) them to have obtained specific pre- and post-graduate
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31 80 training, an appropriate federal certificate, [22] and there is a compulsory continuing education
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33 81 requirement. [16, 18, 23, 24]
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38 83 Cooperation between physicians and pharmacists has the potential to facilitate access to vaccination
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40 84 and other health services and to improve the quality of the care delivered. [25-27] However,
41
42 85 vaccination counseling and administration in pharmacies has previously been met with resistance by
43
44 86 physicians in the US and other countries, [13, 28] with physicians expressing doubts that pharmacists
45
46 87 are qualified to deal with acute adverse (i.e. allergic) reactions to vaccines, but also related to fears
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48 88 of reduced physician revenue when patients obtain vaccination in pharmacies rather than physicians'
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50 89 offices. Conversely, Swiss pharmacists have been critical of physicians being allowed to sell
51
52 90 medication directly to the patient in their offices (a practice referred to in Switzerland as "self-
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54 91 dispensation" of medication by physicians) in most of Switzerland, thereby reducing revenue from
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56 92 drug sales in pharmacies. [29, 30]
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3 93 Since vaccination services overlap between the fields of activity of physicians and pharmacists, and
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5 94 due to the potential for friction between these professional groups around issues of revenue and
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7 95 authority, this topic merits further study, particularly in Switzerland where the opportunity to
8
9 96 vaccinate in pharmacies is relatively recent and pharmacists have a new role regarding vaccination.
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11
12 97 [19] Since studies have shown that inter-professional interactions between pharmacists and general
13
14 98 practitioners could be considerably improved, [25, 26] it is important to understand the impact of the
15
16 99 above mentioned inter-professional political issues on cooperation between physicians and
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19 100 pharmacists.

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21 101 Here we provide a detailed qualitative characterization of the perspectives of key physician and
22
23 102 pharmacy stakeholders from professional societies, public health departments, and community
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25 103 pharmacy boards on professional training, vaccination counseling and administration, and the
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27
28 104 respective roles and competencies of physicians and pharmacists.

31 105 **METHODS**

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34 106 We conducted this study in the context of the Swiss National Research Program 74 (NRP74) on
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36 107 vaccine-hesitant patients and physicians in Switzerland. [6, 31] The study was approved by the local
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38 108 ethics committee (Ethikkommission Nordwest- und Zentralschweiz). We obtained informed consent
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40 109 from all participants.

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45 111 We selected participants through purposive sampling. The principal investigator (author 5) recruited
46
47 112 all participants via email. Participants included stakeholders with a medical or pharmaceutical
48
49 113 degree, including public health authorities, heads of community pharmacy management boards, and
50
51 114 heads of professional medical and pharmaceutical associations (Table 2). A total of 20 stakeholders
52
53 115 were contacted, of whom 1 declined to participate due to general lack of time, and 5 were unable to
54
55 116 participate due to constraints related to the coronavirus pandemic. We interviewed each participant
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3 117 once, with one interview conducted with two participants simultaneously. To ensure anonymity, we
4
5 118 use pseudonyms throughout. Participants' exact professional affiliations are not displayed.

6
7 119
8
9 120 We designed a semi-structured qualitative interview guide based on previous projects of the NRP74
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11 121 vaccine hesitancy program [7, 32] and finalized it after several pilot interviews and revisions by team
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13 122 members. The guide included 22 questions aimed at capturing in-depth insights about participants'
14
15 123 perspectives on professional training and competence, vaccination counseling in pharmacies,
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17 124 immunization rates, administration modalities, vaccination costs, and mandatory vaccination. Several
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19 125 interviewees requested and received the interview guide from us in advance.
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24
25 127 We conducted interviews with participants in the German- and French-speaking regions of
26
27 128 Switzerland from February to April 2020. Two senior pharmacy students trained in qualitative
28
29 129 methods conducted the interviews (author 1 and author 2). All interviews were audio-recorded and
30
31 130 transcribed verbatim. We transcribed the interviews in the language of utterance (German or
32
33 131 French). The French interviews were then translated into German by a native bilingual research team
34
35 132 member. We regularly discussed data interpretation in the team during the process of transcription.
36
37 133 After several rounds of in-depth readings, we developed a coding scheme. Coding allows data to be
38
39 134 classified for subsequent, systematic analyses. We grouped similar codes into themes and organized
40
41 135 data into three main themes: (1) competence of various health care providers (HCP) to provide
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43 136 vaccination counseling, (2) roles of physicians and pharmacists in vaccination counseling, and (3)
44
45 137 contribution of physicians and pharmacists to increasing immunization rates in Switzerland.
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53 139 Transcripts were coded and analyzed using thematic analysis, following Braun and Clarke's 6 phases
54
55 140 in order to organize and analyze the data. [33] To structure and support the analysis, we used the
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57 141 Framework Method by Gale and colleagues. [34] In line with the Framework Method, the analysis of
58
59 142 the coding scheme and themes was reviewed independently by other group members. The research

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2
3 143 team discussed any discrepancies in coding. We used the Consolidated criteria for Reporting
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5 144 Qualitative research checklist (COREQ) as guidelines for reporting qualitative results. [35] All quotes
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7 145 have been translated into English. In the following sections, we will use the term clients to refer to
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9 146 patients and clients, unless directly citing participants.
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148 RESULTS

19 149 Study participants had a medical (N=8) or pharmaceutical (N=6) professional background (Table 2).
20
21 150 Two participants with a medical background had additional training in complementary and
22
23 151 alternative medicine (CAM). The interviews lasted from 30 to 60 minutes, with an average of 44
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25 152 minutes.
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29 153 We first illustrate who participants considered to be competent to provide vaccination counselling
30
31 154 and what formal requirements this should entail. Second, we describe participants' perspectives on
32
33 155 the roles of the two main actors in vaccination counselling in Switzerland: physicians and
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35 156 pharmacists. Third, we examine participants' suggestions for how physicians and pharmacists could
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37 157 potentially contribute to increasing vaccination rates.
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42 159 *Table 2: Characteristics of participants*
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Pseudonym	Language Region	Professional affiliation	Occupation
Ms. Tanner	German	Swiss Pharmacists Association	Pharmacist
Ms. Thies	German	Swiss Pharmacists Association	Pharmacist
Mr. Tschopp	German	Swiss Young Pharmacists Group	Pharmacist
Mr. Nagy	French	Head of a community pharmacy chain	Pharmacist

Ms. Zehnder	French	Chief pharmacist in public health department	Pharmacist
Ms. Bertschi	German	Chief pharmacist in public health department	Pharmacist
Mr. Camenzind	German	Swiss Federal vaccination commission	Physician
Ms. Felder	German	Swiss association of complementary medicine physicians	Physician
Mr. Tiefenbacher	German	Swiss association of paediatricians	Physician
Ms. Dahl	German	Swiss Society for General and Internal Medicine	Physician
Mr. Zeller	German	Major complementary medicine hospital	Physician
Mr. Müller	German	Swiss Medical Association	Physician
Ms. Lehmann	German	Chief physician in public health department	Physician
Mr. Meyer	French	Chief physician in public health department	Physician

160

161 **Healthcare professionals who are competent to provide vaccination**

162 **counselling**

163 We asked participants which healthcare professionals were competent to provide vaccination
 164 counseling. All participants agreed that vaccination topics were "complex issues" and argued that
 165 sound expert knowledge about the different vaccines, their efficacy, safety, and how to deal with
 166 complications was required. Participants also emphasized the importance of knowing one's "own
 167 limits" and of seeking expert advice when uncertainties arise. Furthermore, they discussed how an
 168 interest in the topic of vaccinations and a solid knowledge base was a prerequisite for providing

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3 169 scientific and objective advice and to be able to answer “tough” questions and provide in-depth
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5 170 information.

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7
8 171 According to the participants’ descriptions of competence, pharmacists and physicians best meet
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10 172 criteria for competent vaccination counseling. As Ms. Tanner (Pharmacist, Swiss Pharmacists
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12 173 Association), explained, physicians and pharmacists both are qualified to provide vaccination
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14 174 counseling: "All things considered, to have a really good conversation with the client (...), for me, an
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16 175 academic background is necessary to have a good understanding of the information, of the
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18 176 immunology, so that you can explain a vaccine correctly. And that is why I feel that if a client wants
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20 177 to be informed in-depth, vaccination counseling currently belongs in the hands of physicians and
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22 178 pharmacists."

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29 180 Some of the participants explained that, in addition to physicians and pharmacists, other medical
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31 181 professionals who do not have university training, such as nurses, medical practice assistants, and
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33 182 pharmacy assistants, could also be competent to provide appropriate vaccination advice. Ms.
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35 183 Lehmann (chief physician, public health department) expressed that HCPs with various backgrounds
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37 184 who obtain additional vaccination training are competent to provide high quality vaccination
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39 185 counseling. Participants agreed that HCPs without university training could, at the very least, relieve
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41 186 physicians and pharmacists by evaluating clients’ vaccination status, asking certain triage questions
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43 187 or administering vaccines.

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50 189 Only one participant, Mr. Zeller (physician, Swiss CAM hospital), saw vaccination counseling and
51
52 190 administration as being outside of pharmacists’ area of expertise. He explained that pharmacists who
53
54 191 vaccinate would "interfere" with the job of the physician, arguing that pharmacists would vaccinate
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56 192 with other intentions; in his view, profit would be pharmacists’ primary focus, meaning that there
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58 193 would be a possible conflict of interest. He said that during the physician-patient encounter, the

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2
3 194 primary goal is not selling and administering a vaccine, but to counsel the patient, to aid them in
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5 195 their decision-making process, and to embed vaccination in the medical check-up visit.
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8 196 Formal requirements to become competent 9

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11 197 When discussing how physicians and pharmacists acquired their vaccination counseling and
12
13 198 administration competence, participants considered HCPs' university education, post-graduate
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15 199 training, and continuing education. Participants described how all physicians are allowed to vaccinate
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17 200 after post-graduate training to obtain a medical specialist title. In contrast, pharmacists can only
18
19 201 vaccinate clients by meeting 2 conditions: 1) completing specific post-graduate training course
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21 202 leading to a certificate of competence for vaccination; and 2) fulfilling regular continuing education
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23 203 requirements. Both physician and pharmacist participants saw room for improved quality of
24
25 204 vaccination counseling for physicians, by increasing the content of their pre-graduate vaccination
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27 205 training.
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32 206 All pharmacists agreed that vaccine education during pharmaceutical university training in
33
34 207 Switzerland was excellent, especially since 2016 when the vaccination content of the curriculum was
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36 208 updated. According to Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group), however, there is
37
38 209 "room for improvement" regarding communication training for both physicians and pharmacists.
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42 210 Opinions regarding coverage of vaccination topics in medical school differed. Most participants felt
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44 211 that physicians received only limited and "superficial" training on vaccination. According to Mr.
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46 212 Tiefenbacher (physician, Swiss association of paediatricians), vaccination is a topic that receives only
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48 213 "marginal" attention in medical school. He pointed out: "I cannot remember many vaccine-specific
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50 214 lectures [in medical school], let alone practical courses. (...) That is for sure. And whether it is
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52 215 different now, in 2020 (...), I do not think so. When I talk to medical students or have master students
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54 216 with me who are in their fourth year [of medical school], or when I do one-on-one student tutoring,
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56 217 vaccination for them is still a closed book. I assume that probably has not changed much today."
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3 218 In terms of post-graduate training, according to both physician and pharmacist participants,
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5 219 pharmacists who have acquired the post-graduation vaccination certificate have obtained
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7 220 “outstanding and stringent” training. In contrast, regarding post-graduate medical residency training,
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10 221 some participants considered that the vaccination issues were not discussed in enough detail. Mr.
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12 222 Tiefenbacher (physician, Swiss association of paediatricians) expressed wishing to be confronted with
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14 223 vaccination questions "from the beginning on and more frequently" during post-graduate residency
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16 224 training.

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19 225 Regarding continuing education, Swiss pharmacists must undergo continuing education in order to
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21 226 maintain their vaccination certification. Participants felt that this sufficiently ensured pharmacists’
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23 227 competence. In contrast, physicians do not have to obtain any continuing vaccine education. One
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25 228 pharmacist (Mr. Nagy, pharmacist, head of a community pharmacy chain) argued how it is in the
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27 229 interest of physicians to receive additional training: “It is a question of individual will. This is the
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29 230 advantage pharmacists have over physicians.” However, Mr. Meyer (chief physician, public health
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31 231 department) considered that regarding formal requirements for vaccination administration, too
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33 232 much is required of pharmacists, whereas too little is demanded of physicians. In his view, the rules
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35 233 for continuing education should be the same for both professions.
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235 **Inter-professional cooperation between physicians and pharmacists**

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46 236 In this section, we discuss stakeholders’ different perspectives on inter-professional cooperation
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48 237 between physicians and pharmacists when it comes to vaccination, a matter on which the interviews
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50 238 revealed considerable disagreement. We illustrate the stakeholders’ characterization of inter-
51
52 239 professional cooperation and how it should best be organized.

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55 240 According to most participants, ample communication and good working relationships on the same
56
57 241 professional level between physicians and pharmacists are important for collaboration to be
58
59 242 effective. As stated by the stakeholders from both disciplines, there is an unmet need for better

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3 243 professional cooperation between physicians and pharmacists. Complex situations and uncertainties
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5 244 regarding vaccine supply, appropriate indications, and complications could thus be resolved
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7 245 together. Furthermore, incorporation of different physician and pharmacist perspectives would
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9 246 ultimately improve the quality of care. Participants expressed how inter-professional cooperation
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11 247 could allow “better access to and understanding of vaccination.” Participants agreed that a primary
12
13 248 goal of inter-professional cooperation would be to put the patient at the center. Mr. Müller
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15 249 (physician, Swiss Medical Association) succinctly summarized this point by arguing that vaccination
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17 250 needs to be “easy for the people, right? That's the point.”
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20
21 251 Furthermore, participants argued how physicians and pharmacists should pursue common goals,
22
23 252 such as providing the best possible medical care and improving vaccination rates. For example, Ms.
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25 253 Tanner (pharmacist, Swiss Pharmacists Association) stated, “[It's] not only the pharmacists. All actors
26
27 254 are important here. We have to assure somehow that we all pull together. That we respond to the
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29 255 level of knowledge of patients or vaccine-hesitant people so that they can be convinced, and
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31 256 vaccination rates can be increased and health care costs reduced.”
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33
34
35 257 However, participants described how, at present, inter-professional cooperation was mostly non-
36
37 258 existent. According to Ms. Dahl (physician, Swiss Society for General and Internal Medicine) the
38
39 259 reason for the lack of inter-professional cooperation was clear: “Cooperation between physicians and
40
41 260 pharmacists? I don't think there is any communication, sorry [laughs].” Mr. Meyer (chief physician,
42
43 261 public health department) explained how he felt that physicians and pharmacists “put up with each
44
45 262 other” but that there was “no cooperation.” Mr. Müller (physician, Swiss Medical Association) even
46
47 263 described inter-professionalism as an “illusion”.
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53 265 According to participants, pharmacists' ability to vaccinate might be an important source of friction
54
55 266 for some physicians and thus the lacking inter-professional cooperation. Mr. Zeller (physician, major
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57 267 swiss CAM hospital) stated that “prevention belongs in the hands of the physician.” This sentiment
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59 268 was echoed by other physician stakeholders. A common stereotype among physicians, according to
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2
3 269 both medical and pharmaceutical stakeholders, was that pharmacists acted "like little physicians"
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5 270 when they vaccinate or provide vaccination counseling. Another sentiment participants described
6
7 271 involved physicians having a "fear" of pharmacists overstepping their professional roles, which might
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9
10 272 bring physicians in general to develop a "competitive" attitude with pharmacists. Participants
11
12 273 explained how there was a perception that pharmacists were "taking something away" from
13
14 274 physicians by being allowed to vaccinate.

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16 275 Mr. Tiefenbacher (physician, Swiss association of paediatricians) explained this "skepticism" of
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18 276 physicians towards pharmacists by detailing how vaccination was often the only contact between the
19
20 277 family physician and their healthy patients and that vaccination in pharmacies carried the potential
21
22 278 to eliminate physician-patient contact entirely. He clarified that physicians' skepticism was
23
24 279 attributable to the fact that pharmacists would try to sell "lots of things" in addition to vaccinations,
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26 280 since pharmacies nowadays resemble "general stores".
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32 282 Other participants stated that pharmacies were merely "an additional service" to the already existing
33
34 283 ones. Mr. Nagy (pharmacist, head of a community pharmacy chain) explained: "Pharmacies provide
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36 284 care to individuals who have no family physician, who do not regularly see a physician, or have no
37
38 285 contact with any medical professional. The only medical profession with which they have contact is
39
40 286 the pharmacist. This will only *increase* immunization rates. There is no competition there, quite the
41
42 287 opposite."
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44
45 288 Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group) similarly pointed to vaccination in
46
47 289 pharmacies as "the best way" to reach people who never consult a physician.

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49
50 290 Ms. Bertschi (chief pharmacist, public health department) explained that pharmacists should apply
51
52 291 all knowledge that they acquired during their training and that could be legally provided. Vaccination
53
54 292 being included in pharmacists' training was an obvious area of pharmacists' expertise. Furthermore,
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56 293 all pharmacist participants stated that pharmacists, as trained HCPs, increasingly are considered key
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58 294 providers of preventive medicine in Switzerland.
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5 296 To improve the relationships between physicians and pharmacists, Mr. Nagy (pharmacist, head of a
6
7 297 community pharmacy chain) argued that joint workshops on vaccination topics for physicians and
8
9 298 pharmacists should be arranged. Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group)
10
11 299 proposed joint social events to help physicians and pharmacists get to know each other better. Ms.
12
13 300 Felder (physician, association of CAM physicians) echoed this thought, "I think that inter-professional
14
15 301 cooperation can be fruitful. Together is always better than against each other, right?"
16
17 302 However, two participants felt that further cooperation was not necessary. Mr. Zeller (physician,
18
19 303 major CAM hospital) explained that this would lead to "complicate" rather than simplify matters.
20
21 304 According to him, pharmacist-physician cooperation would lead to difficulties in defining who is in
22
23 305 charge and responsible for vaccination decisions. Ms. Bertschi (chief pharmacist, public health
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25 306 department) also expressed skepticism: "Either the physician or pharmacist vaccinates. I do not see
26
27 307 much inter-professional cooperation here."
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309 Self-dispensation of medication in physicians' offices as a "counterpart" to 310 vaccination in pharmacies

311 Participating stakeholders discussed physicians' practice of selling medication in their offices directly
312 to their patients (self-dispensation), thereby generating significant financial revenue, potentially at
313 the disadvantage of the local pharmacy. On the other hand, vaccination in pharmacies might
314 generate revenue for the pharmacy, potentially disadvantaging local office physicians.

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316 Several physician stakeholders reported that physicians and pharmacists should have "equal rights"
317 by arguing that self-dispensation by physicians should be allowed in Swiss cantons where vaccination
318 in pharmacies is allowed. Some pharmacists, however, noted that this was already largely the case.

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3 319 Cantons with liberal laws on self-dispensation by physicians typically also promote vaccination in
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5 320 pharmacies.

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10 322 Some pharmacists stated that self-dispensation and vaccination in pharmacies could not be directly
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12 323 compared because vaccination in pharmacies was based on compulsory postgraduate training and
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14 324 quality assurance requirements, whereas no further educational requirements are imposed on "self-
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16 325 dispensing" physicians. Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group) criticized this:
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18 326 "This is all political. Self-dispensation is an unregulated system that is wildly proliferating in doctors'
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20 327 offices. In contrast, vaccination in pharmacies is tightly regulated, and physicians and the authorities
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22 328 keep a close eye on us. It's about economic privileges."
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27 330 Despite the mentioned discrepancies, both physician and pharmacist participants were overall
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29 331 confident that cooperation between the two professions will improve. However, participants
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31 332 discussed how pharmacists should not "push" and should "proceed in small steps," because it is
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33 333 important that "trust must be built up and physicians must not get angry." This view was expressed
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35 334 by both physician and pharmacist stakeholders.
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40 41 336 **Vaccination in pharmacies as a strategy to increase vaccination rates**

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45 337 We asked participants about the extent to which physicians and pharmacists could play roles in
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47 338 increasing vaccination rates. Stakeholders explained that physicians and pharmacists play a key role
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49 339 in this regard by providing vaccine information to patients and clients. Ms. Zehnder (chief
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51 340 pharmacist, public health department) explained: "You have to provide people with information,
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53 341 awareness, and responsibility, without the specter of fear." Participants described it being essential
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55 342 to inform patients and clients "skillfully" so that the advice does not cause resistance. Physicians and
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57 343 pharmacists often face difficult questions on vaccination and need to take sufficient time for
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3 344 counseling such clients. Providers should face up to "untruths," misinformation, and outdated
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5 345 information. Some stakeholders believed that misinformation leads to the development of
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7 346 "vaccination sceptics" or "vaccine-hesitant" people. Mr. Meyer (chief physician, public health
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9 347 department) argued how HCPs collectively needed to prevent this "minority" from "setting the
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11 348 tone." Participants argued that it was important to educate vaccine-hesitant groups specifically. Mr.
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13 349 Müller (physician, Swiss Medical Association) and Ms. Tanner (pharmacist, Swiss Pharmacists
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15 350 Association) mentioned motivational interviewing techniques to better inform clients and guide
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17 351 them towards their vaccine decisions. For Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group),
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19 352 vaccination counseling required an "emotional and trusting" relationship between pharmacists and
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21 353 their clients. In his view, by providing correct and easily understandable information, the number of
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23 354 people willing to be vaccinated would increase.

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29 355 Similar to previous qualitative research with CAM physicians in Switzerland [7], two physicians
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31 356 specialized in complementary medicine stated that increasing vaccination rates in Switzerland is not
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33 357 a priority for them. Ms. Felder (physician, association of CAM physicians) explained that if the patient
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35 358 "had good reasons not to be vaccinated," she would not try to persuade them to get vaccinated just
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37 359 to increase vaccination rates. Rather, she argued that by providing "transparent" and
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39 360 "individualized" vaccination counseling, patients should be able to make a more informed
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41 361 vaccination decision. In her view, this will ultimately lead to increased vaccination rates. Mr. Zeller
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43 362 (physician, major CAM hospital) put it bluntly: "I treat patients and not vaccination rates. My primary
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45 363 goal is to protect those [with vaccines] who want to be protected, and to counsel them as objectively
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47 364 as possible. Those who don't want to be protected: well, they can do this, it's their own
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49 365 responsibility."

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54 366 Finally, pharmacy stakeholders suggested that different regulations in the Swiss cantons (states)
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56 367 should be harmonized. Ms. Tanner (pharmacist, Swiss Pharmacists Association) stated: "Each canton
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3 368 has different rules for vaccination in pharmacies - this makes no sense. The goal clearly is to increase
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5 369 vaccination rates in the whole country.”
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11 371 **DISCUSSION**

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15 372 In this study, we provide a detailed characterization of key Swiss medical and pharmaceutical
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17 373 stakeholders' perspectives on vaccination in pharmacies. Stakeholders viewed both physicians and
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19 374 pharmacists as competent to provide vaccination counseling. By providing low threshold access to
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21 375 vaccination counseling, pharmacists play an important public health role, and vaccine administration
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23 376 in pharmacies increases vaccination rates. However, stakeholders noted only limited professional
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25 377 cooperation between pharmacists and physicians on vaccination and recommended improving
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27 378 collaboration.
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31 379 The results of this study show how physicians and pharmacists in Switzerland serve as major actors
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33 380 for providing high quality vaccination counseling and administering vaccines. This is in line with
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35 381 previous studies. [10, 13, 17, 36, 37] For example, Harding et al. (2004) argue how pharmacists have
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37 382 in-depth knowledge of physicochemical properties of drugs and vaccines, of pharmacology,
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39 383 pharmacokinetics, drug interactions, and adverse drug effects. [38, 39] Our stakeholders discussed
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41 384 extensive pre- and post-graduate training as a key prerequisite for pharmacists' vaccination
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43 385 competence. Schaffer et al. (2008) point out how pharmacists' willingness to complete additional
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45 386 post-graduate vaccination training demonstrates their commitment and high level of interest in the
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47 387 topic of vaccination. [40] Previous authors recorded that pharmacy students in Switzerland receive
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49 388 more hours of training on vaccination topics as part of their curriculum than medical students. [24]
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51 389 Several of our participants mentioned this as evidence that pharmacists are well prepared for
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53 390 vaccination counseling and administration, perhaps even more so than physicians.
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3 391 Our results document a considerable potential for tension between physicians and pharmacists on
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5 392 the topic of vaccination. In a 2014 report from Ireland, general practitioners expressed concern
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7 393 about pharmacists vaccinating, questioning their professional competence and ability to deal with
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9 394 vaccine-related complications in the pharmacy. [28] Interestingly, most Swiss physician stakeholders
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11 395 were supportive of vaccination in pharmacies as an important addition to vaccination in physicians'
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13 396 offices. This could be interpreted as a favorable change in interprofessional attitudes in recent years,
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15 397 with a welcome emphasis on physicians' and pharmacists' shared goal of achieving success for
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17 398 national immunization programs by increasing vaccination rates. Nevertheless, stakeholders also
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19 399 mentioned concerns about pharmacists who vaccinate, potentially interfering with the financial
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21 400 wellbeing of physicians, by taking customers and therefore revenue away from physicians. This is in
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23 401 line with previous reports. [13, 28] The direct comparison by our stakeholders of selling medication
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25 402 by physicians in practice with vaccination in pharmacies was an interesting observation that has not
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27 403 previously been documented. Pharmacists' concerns about loss of income and authority has also
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29 404 been recorded in the US. [41] Importantly, selling medication constitutes a significant source of
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31 405 revenue for "self-dispensing" physicians, representing the second largest distribution channel in the
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33 406 Swiss drug market. [19, 42] In cantons where physician self-dispensation is allowed, the number of
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35 407 pharmacies is lower than in the other cantons. [30]
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41 408 Our findings underline the importance of considering financial aspects and highlight the extent to
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43 409 which such decisions are politically charged and likely need to be resolved at a higher political level.
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45 410 As the Swiss Federal Office of Public Health mentioned in a 2016 report, inter-professional
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47 411 cooperation might meet fewer obstacles in cantons without self-dispensation of medicines by
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49 412 physicians. [19, 29] In addition, the perceived potential for financial competition between physicians
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51 413 and pharmacists in the private sector may provide a possible explanation for the currently limited
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53 414 degree of cooperation between these professional groups.
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58 415 In line with a previous report, [27] study participants discussed how inter-professional cooperation in
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60 416 the field of vaccination is likely to facilitate access to vaccination information and delivery, [13, 17]

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3 417 heightened awareness concerning vaccinations, and, consequently, increased immunization rates. [9,
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5 418 43, 44] This may concern particularly people with previously little contact with healthcare systems,
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7 419 such as adolescents and healthy adults who have no regular physician or socio-economically
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9 420 disadvantaged groups. [17, 39] Pharmacy and physician stakeholders underscored how active
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11 421 communication and the provision of high quality information on vaccination by the provider
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13 422 increases vaccination rates. This is in keeping with previous observations, such as those of
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15 423 Grabenstein et al (1998) who found that patients are more likely to be vaccinated if they were
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17 424 approached actively by the provider. [13] Active initiation of the conversation by the provider, and
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19 425 the use of motivational interviewing (pioneered by Rollnick et al. [45]) may be useful to respond to
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21 426 patient needs. [46] Motivational interviewing has already been applied in the field of vaccination and
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23 427 has successfully been used to increase vaccination intention and vaccination rates by both
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25 428 pharmacists [46] and physicians. [47, 48]

30 429 **STRENGTHS AND LIMITATIONS**

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34 430 Strengths of this study include a qualitative approach, which allowed us to gain a deeper
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36 431 understanding of the topic of vaccination in pharmacies from the participants' own perspectives. Our
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38 432 results provide novel insights into the opinions of key Swiss experts with both medical and
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40 433 pharmaceutical backgrounds. This is an understudied aspect in the field of vaccination services. By
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42 434 including stakeholders from German- and French-language regions of Switzerland, from public
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44 435 health, professional pharmacists and physicians organisations, complementary medicine and
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46 436 biomedicine, we obtained detailed insights into the views of a wide variety of key actors.

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50 437 Qualitative studies have limitations. Our results reflect the opinions of a limited number of experts
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52 438 and should be generalized with caution. For qualitative interviewing, the interviewer effect [6] and
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54 439 the social desirability bias [49] may affected the information obtained. Given that our data was
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56 440 collected in the German- and French-speaking regions of Switzerland, translation of interviews into
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58 441 English might have altered the meaning of some statements due to language-specific nuances. That

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3 442 being said, language-related issues were discussed among the multilingual team throughout data
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5 443 analysis. These limitations can be addressed by including our study findings into future quantitative
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7 444 research that aims at studying similar issues on a wider scale.
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10 445 **CONCLUSION**

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14 446 Our results suggest that promoting the integration of pharmacists as vaccine counselors and vaccine
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16 447 administrators should be considered in order to maintain successful national immunization
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18 448 programs. Health policymakers should consider more actively encouraging inter-professional
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20 449 cooperation between physicians and pharmacists which currently seems limited in Switzerland and
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22 450 elsewhere. [27] Despite the inclusion of pharmacists as primary care providers by the Swiss National
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24 451 Vaccination Strategy [4, 8] participants criticized the lack of uniform regulation for vaccination in
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26 452 pharmacies throughout Switzerland. Active initiation of discussion of vaccines by pharmacists and
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28 453 physicians with their patients and providing high quality vaccination advice may further contribute to
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30 454 increased immunization rates.
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40
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42
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46 459 **AUTHOR CONTRIBUTIONS**

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50
51 460 **MJ** coordinated qualitative data collection and evaluation and drafted the manuscript. **JT** and **MA**
52
53 461 participated regularly in study advisory board meetings and provided regular inputs about the
54
55 462 qualitative results. **MJD** took a lead role in establishing the study's qualitative methodologies and
56
57 463 provided regular study supervision, inputs about the qualitative results and valuable feedbacks
58
59 464 during the manuscripts writing. **PET** is the principal investigator, directed the funding request and
60

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3 465 supervised the conduct of the study. He provided infectious disease and general medical expertise,
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5 466 and oversaw study conception, design, data collection, analysis and interpretation.
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9 467 All authors read, contributed to and approved the final manuscript.
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18 470 Switzerland.
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20 21 471 **COMPETING INTERESTS**

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25 472 None declared.
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27 28 473 **PATIENT AND PUBLIC INVOLVEMENT STATEMENT**

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32 474 No patient involved.
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34 35 475 **DATA AVAILABILITY STATEMENT**

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39 476 Data are available upon reasonable request.
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41 42 477 **ETHICS STATEMENT**

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45 478 The study was approved by the local ethics committee, Ethikkommission Nordwest- und
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47 479 Zentralschweiz (EKNZ), project-ID: 2017-00725
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626 **Supplemental material- online only**

627

Supplementary Table 1: List of vaccinations authorized in Swiss pharmacies according to cantons

Canton	Approval since (extensions)	Vaccination in pharmacies	Age [Years]	Influenza	FSME	Hep. A	Hep. B	Hep. A+B	MMR	Other (HPV, dT _a , etc)
AG	-	-								
AI	-									
AR	-	-								
BE	2015 (2018)	+	16	+	+	+*	+*	+*		
BL	2016 (2017, 2019.07)	+	16	+	+	+	+	+	+	+ all according to CH guidelines
BS	2018	+	18	+	+	+	+	+		
FR	2015 (2018)	+	16	+	+				+	Tetanus (dT, dTp)
GE	2016 (2018.12)	+	16	+						
GL	2020.02	+	16	+	+	+*	+*	+*		
GR	2016 (02.2020)	+	16	+	+	+*	+*	+*	+*	+* all according to CH guidelines
JU	2016 (2019.03)	+	16	+	+	+	+	+		
LU	2017	+	16	+	+	+*	+*	+*	+*	+* all according to CH guidelines
NE	2015	+	16	+	+				+*	
NW	2017	+	16	+	+	+*	+*	+*		
OW	2019	+	16	+	+	+*	+*	+*		
SG	2016	+	16	+	+					
SH	2016	+	16	+	+	+*	+*	+*		
SO	2015	+	16	+	+	+	+	+	+	+ all according to CH guidelines
SZ	2016	+	16	+	+	+*	+*	+*		
TI		R**								
TG	2016	+	16	+	+	+*	+*	+*	+*	+* all according to CH guidelines
UR	2019.05	+	> 16	+	+	+*	+*	+*		
VD	2016 (2017)	+	16	+	+	+*	+*	+*	+	
VS	2016 (08.2019; 02.2020)	+	16	+	+					further vaccinations within the framework of campaigns (time-limited, cantonally defined)
ZG	2017	+	16	+	+	+*	+*	+*		
ZH	2015	+	16	+	+	+*	+*	+*		

*from 2nd dose, after initial vaccination by physician has taken place

**R: Vaccination by prescription

Table as of: 02/25/2020

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	
Occupation	3	What was their occupation at the time of the study?	
Gender	4	Was the researcher male or female?	
Experience and training	5	What experience or training did the researcher have?	
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	
Sample size	12	How many participants were in the study?	
Non-participation	13	How many people refused to participate or dropped out? Reasons?	
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	
Field notes	20	Were field notes made during and/or after the interview or focus group?	
Duration	21	What was the duration of the interviews or focus group?	
Data saturation	22	Was data saturation discussed?	
Transcripts returned	23	Were transcripts returned to participants for comment and/or	

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	
Description of the coding tree	25	Did authors provide a description of the coding tree?	
Derivation of themes	26	Were themes identified in advance or derived from the data?	
Software	27	What software, if applicable, was used to manage the data?	
Participant checking	28	Did participants provide feedback on the findings?	
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	
Data and findings consistent	30	Was there consistency between the data presented and the findings?	
Clarity of major themes	31	Were major themes clearly presented in the findings?	
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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BMJ Open

“Vaccination needs to be easy for the people, right ?”: A Qualitative Study of the Roles of Physicians and Pharmacists Regarding Vaccination in Switzerland

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4 1 **“Vaccination needs to be easy for the people, right ?”: A Qualitative Study**
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7 2 **of the Roles of Physicians and Pharmacists Regarding Vaccination in**
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22 ABSTRACT

23 **Objective** Vaccination in pharmacies has been a key component of national vaccination strategies to
24 facilitate vaccination access. Qualitative data on the perspectives of professional stakeholders on
25 vaccination in pharmacies and on the professional relations of pharmacists with physicians regarding
26 increasing immunization rates is limited. We conducted a qualitative study in Switzerland. The main
27 aim was to gain further insight into professional stakeholders' perspectives on vaccination counseling
28 and administration conducted in pharmacies, and to further understand their views on physicians'
29 and pharmacists' roles in increasing immunization rates.

30 **Design** We conducted semi-structured qualitative interviews. We coded and analyzed transcripts
31 using thematic analysis.

32 **Setting** Face-to-face interviews took place in German- and French-speaking regions of Switzerland.

33 **Participants** We interviewed 14 key vaccination stakeholders including health authorities, heads of
34 pharmacy management, and professional association boards. All participants had a background in
35 medicine or pharmacy.

36 **Results** Three main themes emerged from the qualitative data: (1) Participants viewed pharmacists
37 as competent to provide vaccination counseling and administration based on their university
38 training; (2) inter-professional cooperation between physicians and pharmacists on vaccination
39 topics is limited and should be improved; and (3) pharmacists play an important role in increasing
40 immunization rates by facilitating vaccination access and through provision of vaccination
41 counseling.

42 **Conclusion** By providing vaccination counseling and administering vaccines, pharmacists play an
43 important public health role. Healthcare policies and health authorities should encourage more

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3 44 involvement of pharmacists and encourage inter-professional cooperation between physicians and
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5 45 pharmacists in order to improve vaccination counseling and increase immunization rates.
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9 46 **Keywords:** Vaccination, Immunization Rates, Pharmacist, Physician, Stakeholder, Inter-
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11 47 professionalism
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14 48 **STRENGTHS AND LIMITATIONS OF THIS STUDY**

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17
18 49 1. The qualitative study design provides novel insights into the opinions of key Swiss experts
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20 50 with both medical and pharmacy backgrounds and allows us to gain a deeper understanding
21
22 51 of the topic of vaccination in pharmacies from the participants' own perspectives.
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27 53 2. This study includes detailed insights into the views of a wide variety of key actors, by
28
29 54 including stakeholders from German- and French-language regions of Switzerland, from
30
31 55 public health, professional pharmacists and physicians organisations, and complementary
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33 56 medicine and biomedicine.
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38 58 3. The methodological approach to recruit only key Swiss experts on vaccination topics limits
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40 59 our results, because practicing physicians and pharmacists are under-represented in our
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42 60 study.
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47 62 4. Our results reflect the opinions of a limited number of experts and should be generalized
48
49 63 with caution.
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65 INTRODUCTION

66 Despite generally high vaccination rates, vaccination coverage in many Western countries is not
67 currently meeting public health targets to protect their populations against measles, human
68 papillomavirus (HPV), and influenza [1-4]. Insufficient immunization rates are not always simply a
69 result of negative attitudes towards vaccination, a lack of reliable information, or vaccine hesitancy
70 (VH); they can also result from inadequate access to vaccination services [5-9]. For example, hard-to-
71 reach populations, such as healthy adolescents with no primary care physician, are often missed by
72 healthcare systems [10]. Pharmacists have been involved in vaccination for many years [11], and
73 pharmacists involvement has been linked to increased vaccination rates, for example in the United
74 States [12, 13], Canada [14] and in the UK [15]. With their extended business hours and walk-in
75 services, pharmacies offer easy access to health care providers and immunization delivery [13, 16]. In
76 recent years, pharmacists in certain Western countries have become involved in offering vaccination
77 services by serving as vaccination advocates, facilitators, and immunizers [6, 17-21].

78 Vaccination in pharmacies can increase access to immunizations and improve vaccination counseling
79 [14, 20]. For these reasons, pharmacists have been allowed and are encouraged to administer certain
80 vaccines as a key component of the 2015 Swiss National Vaccination Strategy [5, 9]. Additionally,
81 pharmacists are now increasingly expected to provide preventive health services, having been
82 attributed this role in the Swiss national law of medical professions [22-24]. In 22 of the 26 Swiss
83 cantons (states), community pharmacists can currently administer vaccines (Table 1) [25]. This
84 requires (since 2011) them to have obtained specific pre- and post-graduate training, an appropriate
85 federal certificate [26], and there is a compulsory continuing education requirement [20, 22, 27, 28].

86 Cooperation between physicians and pharmacists has the potential to facilitate access to vaccination
87 and other health services and to improve the quality of the care delivered [29-32]. However,
88 vaccination counseling and administration in pharmacies has previously been met with resistance by
89 physicians in the US and other countries [17, 33], with physicians expressing doubts that pharmacists

90 are qualified to deal with acute adverse reactions to vaccines, such as anaphylactic reactions. This
 91 resistance was also related to fears of reduced physician revenue when patients obtain vaccination in
 92 pharmacies rather than physicians' offices [32]. Conversely, pharmacists have been critical of
 93 physicians being allowed to sell medication directly to the patient in their offices (a practice referred
 94 to in Switzerland as "self-dispensation" of medication by physicians) in countries including the UK
 95 [34, 35] and Switzerland [36, 37], thereby reducing revenue from drug sales in pharmacies.

96 *Table 1: List of vaccinations authorized in pharmacies in Switzerland by canton*

Canton	Approval since (extensions)	Vaccination in pharmacies	Age [Years]	Influenza	FSME	Hep. A	Hep. B	Hep. A+B	MMR	Other (HPV, dT, etc)
AG	-	-								
AI	-									
AR	-	-								
BE	2015 (2018)	+	16	+	+	+	+	+		
BL	2016 (2017,2019.07)	+	16	+	+	+	+	+	+	+ all according to CH guidelines
BS	2018	+	18	+	+	+	+	+		
FR	2015 (2018)	+	16	+	+				+	Tetanus (dT, dTp)
GE	2016(2018.12)	+	16	+						
GL	2020.02	+	16	+	+	+	+	+		
GR	2016 (02.2020)	+	16	+	+	+	+	+	+	+ all according to CH guidelines
JU	2016(2019.03)	+	16	+	+	+	+	+		
LU	2017	+	16	+	+	+	+	+	+	+ all according to CH guidelines
NE	2015	+	16	+	+				+	
NW	2017	+	16	+	+	+	+	+		
OW	2019	+	16	+	+	+	+	+		
SG	2016	+	16	+	+					
SH	2016	+	16	+	+	+	+	+		
SO	2015	+	16	+	+	+	+	+	+	+ all according to CH guidelines
SZ	2016	+	16	+	+	+	+	+		
TI		R**								
TG	2016	+	16	+	+	+	+	+	+	+ all according to CH guidelines
UR	2019.05	+	>16	+	+	+	+	+		
VD	2016 (2017)	+	16	+	+	+	+	+	+	
VS	2016 (06.2019;02.2020)	+	16	+	+					further vaccinations within the framework of campaigns (time-limited, cantonally defined)
ZG	2017	+	16	+	+	+	+	+		
ZH	2015	+	16	+	+	+	+	+		

97 *from 2nd dose, after initial vaccination by physician has taken place

98 **R: Vaccination by prescription

99 Table as of: 02/25/2020

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3 100 Since vaccination services overlap between the fields of activity of physicians and pharmacists, and
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5 101 due to the potential for friction between these professional groups around issues of revenue and
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7 102 authority, this topic merits further study, particularly in Switzerland where the opportunity to
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9 103 vaccinate in pharmacies is relatively recent and pharmacists have a new role regarding vaccination
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11 104 [23]. Since studies have shown that inter-professional interactions between pharmacists and general
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13 105 practitioners could be considerably improved [29, 30], it is important to understand the impact of the
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15 106 above mentioned inter-professional political issues on cooperation between physicians and
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17 107 pharmacists.

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21 108 Here we provide a detailed qualitative characterization of the perspectives of key physician and
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23 109 pharmacy stakeholders from professional societies, public health departments, and community
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25 110 pharmacy boards on professional training, vaccination counseling and administration, and the
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27 111 respective roles and competencies of physicians and pharmacists.

31 112 **METHODS**

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33
34 113 We conducted this study in the context of the Swiss National Research Program 74 (NRP74) on
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36 114 vaccine-hesitant patients and physicians in Switzerland [7, 38]. The study was approved by the local
37
38 115 ethics committee (Ethikkommission Nordwest- und Zentralschweiz). We obtained informed consent
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40 116 from all participants.

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45 118 We selected participants through purposive sampling. The principal investigator (author PT) recruited
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47 119 all participants via publicly available email. Participants included stakeholders with a medical or
48
49 120 pharmacy degree, including public health authorities, heads of community pharmacy management
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51 121 boards, and heads of professional medical and pharmacy associations (Table 2). A total of 20
52
53 122 stakeholders were contacted, of whom 1 declined to participate due to general lack of time, and 5
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55 123 were unable to participate due to constraints related to the coronavirus pandemic. We interviewed
56
57 124 each participant once, with one interview conducted with two participants simultaneously.

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3 125 We designed a semi-structured qualitative interview guide based on previous projects of the NRP74
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5 126 vaccine hesitancy program [8, 39] and finalized it after several pilot interviews and revisions by team
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7 127 members (supplementary file 1 and 2). The guide included questions designed to capture in-depth
8
9 128 insights about participants' perspectives on professional training and competence, vaccination
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11 129 counseling in pharmacies, immunization rates, administration modalities, vaccination costs, and
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13 130 mandatory vaccination. Several interviewees requested and received the interview guide from us in
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22 133 We conducted interviews with participants in the German- and French-speaking regions of
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24 134 Switzerland from February 2020 to April 2020. Two senior pharmacy students trained in qualitative
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26 135 methods conducted the interviews (author MJ and author MAA). Before the interviews we
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28 136 introduced ourselves as pharmacy students and stated our study objectives. We carried out the
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30 137 interviews at the location requested by the participants, such as their offices or a local café. We took
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32 138 field notes during the interview, but did not use them proactively in our analysis. All interviews were
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34 139 audio-recorded and transcribed verbatim. We transcribed the interviews in the language of
35
36 140 utterance (German or French). The French interviews were then translated into German by a native
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38 141 bilingual research team member. All quotes have been translated into English. To ensure anonymity,
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40 142 we use pseudonyms throughout. The interviewers and the study research team assumed that
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42 143 participants were in favor of and aware of the Swiss Vaccination Plan. Since we conducted this work
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44 144 in Switzerland, we also, as researchers and clinicians, use the Swiss Vaccination Plan as the
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46 145 benchmark against which we consider participants' views on vaccination. We regularly discussed
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48 146 data interpretation in the team during the process of transcription. After several rounds of in-depth
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50 147 readings, we developed a coding scheme. Coding allows data to be classified for subsequent,
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52 148 systematic analyses.
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3 149 Transcripts were coded and analyzed using thematic analysis, following Braun and Clarke's 6 phases
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5 150 in order to organize and analyze the data [40]. We made use of the qualitative data analysis software
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7 151 MAXQDA for coding and organising data. The analysis of the coding scheme and themes was
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10 152 reviewed independently by other group members. Data saturation was reached after 9 interviews
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12 153 and confirmed with the following 4 interviews[41].
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15 154 We grouped similar codes into themes and organized data into three main themes: (1) competence
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17 155 of various health care providers (HCP) to provide vaccination counseling, (2) roles of physicians and
18
19 156 pharmacists in vaccination counseling, and (3) contribution of physicians and pharmacists to
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22 157 increasing immunization rates in Switzerland.
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26 159 The research team discussed any discrepancies in coding. We used the Consolidated criteria for
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28 160 Reporting Qualitative research checklist (COREQ) as guidelines for reporting qualitative results, which
29
30 161 applies to all aspects of qualitative research [42]. Participants' exact professional affiliations are not
31
32 162 displayed in order to protect their identities. In the following sections, we will use the term clients to
33
34 163 refer to patients and clients, unless directly citing participants.
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37 164 **Patient and Public Involvement**

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41 166 No patients were involved in this study.
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44 168 **RESULTS**

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49 169 Study participants had a medical (N=8) or pharmacy (N=6) professional background (Table 2). Two
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51 170 participants with a medical background had additional training in complementary and alternative
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53 171 medicine (CAM). The interviews lasted from 30 to 60 minutes, with an average of 44 minutes.
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57 172 We first illustrate who participants considered to be competent to provide vaccination counselling
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59 173 and what formal requirements this should entail. Second, we describe participants' perspectives on
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174 the roles of the two main actors in vaccination counselling in Switzerland: physicians and
 175 pharmacists. Third, we examine participants' suggestions for how physicians and pharmacists could
 176 potentially contribute to increasing vaccination rates.

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178 *Table 2: Participant Characteristics*

Pseudonym	Language Region	Professional affiliation	Occupation
Dr. Tanner	German	Swiss Pharmacists Association	Pharmacist
Ms. Thies	German	Swiss Pharmacists Association	Pharmacist
Mr. Tschopp	German	Swiss Young Pharmacists Group	Pharmacist
Mr. Nagy	French	Head of a community pharmacy chain	Pharmacist
Ms. Zehnder	French	Chief pharmacist in public health department	Pharmacist
Ms. Bertschi	German	Chief pharmacist in public health department	Pharmacist
Dr. med. Camenzind	German	Swiss Federal Vaccination Commission	Physician
Dr. med. Felder	German	Swiss Association of Complementary Medicine Physicians	Physician
Dr. med. Tiefenbacher	German	Swiss Association of Paediatricians	Physician
Dr. med. Dahl	German	Swiss Society for General and Internal Medicine	Physician
Dr. med. Zeller	German	Major complementary medicine hospital	Physician
Dr. med. Müller	German	Swiss Medical Association	Physician
Dr. med. Lehmann	German	Chief physician in public health department	Physician

Dr. med. Meyer	French	Chief physician in public health department	Physician
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181 **Pharmacists are competent to provide vaccination counselling**

182 We asked participants which healthcare professionals were competent to provide vaccination
183 counseling. All participants agreed that vaccination topics were "complex issues" and argued that
184 sound expert knowledge about the different vaccines, their efficacy, safety, and how to deal with
185 complications was required. Participants also emphasized the importance of knowing one's "own
186 limits" and of seeking expert advice when uncertainties arise. Furthermore, they discussed how an
187 interest in the topic of vaccinations and a fundamental knowledge base were prerequisites for
188 providing scientific and objective advice and to be able to answer "tough" questions and provide in-
189 depth information.

190 According to the participants' descriptions of competence, pharmacists, and physicians best meet
191 criteria for competent vaccination counseling. As Ms. Tanner (Pharmacist, Swiss Pharmacists
192 Association), explained, physicians and pharmacists both are qualified to provide vaccination
193 counseling: "All things considered, to have a really good conversation with the client (...), for me, an
194 academic background is necessary to have a good understanding of the information, of the
195 immunology, so that you can explain a vaccine correctly. And that's why I feel that if a client wants to
196 be informed in-depth, vaccination counseling currently belongs in the hands of physicians and
197 pharmacists."

198 **Views on other healthcare professionals' vaccination competency**

199 Some of the participants explained that, in addition to physicians and pharmacists, other medical
200 professionals who do not have university training, such as nurses, medical practice assistants, and

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3 201 pharmacy assistants, could also be competent to provide appropriate vaccination advice. Ms.
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5 202 Lehmann (chief physician, public health department) expressed that HCPs with various backgrounds
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7 203 who obtain additional vaccination training are competent to provide high quality vaccination
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9 204 counseling. Participants agreed that HCPs without university training could, at the very least, relieve
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11 205 physicians and pharmacists by evaluating clients' vaccination status, asking certain triage questions
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13
14 206 or administering vaccines.
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20 208 Only one participant, Mr. Zeller (physician, Swiss CAM hospital), saw vaccination counseling and
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22 209 administration as being outside of pharmacists' area of expertise. He explained that pharmacists who
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24 210 vaccinate would "interfere" with the job of the physician, arguing that pharmacists would vaccinate
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26 211 with other intentions; in his view, profit would be pharmacists' primary focus, meaning that there
27
28 212 would be a possible conflict of interest. He said that during the physician-patient encounter, the
29
30 213 primary goal is not selling and administering a vaccine, but to counsel the patient, to aid them in
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32 214 their decision-making process, and to embed vaccination in the medical check-up visit.
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35 36 215 **Limited vaccination training during medical school compared to excellent** 37 38 39 216 **vaccination education in pharmacy school** 40

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43 217 When discussing how physicians and pharmacists acquired their vaccination counseling and
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45 218 administration competence, participants considered HCPs' university education, post-graduate
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47 219 training, and continuing education. Participants described how all physicians are allowed to vaccinate
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49 220 after post-graduate training to obtain a medical specialist title. In contrast, pharmacists can only
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51 221 vaccinate clients by meeting 2 conditions: 1) completing specific post-graduate training course
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53 222 leading to a certificate of competence for vaccination; and 2) fulfilling regular continuing education
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55 223 requirements. According to physician and pharmacist participants, the quality of vaccination
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3 224 counseling from physicians could be improved by increasing the content of their pre-graduate
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5 225 vaccination training.
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8 226 All pharmacists agreed that vaccine education during pharmacy university training in Switzerland was
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10 227 excellent, especially since 2016 when the vaccination content of the curriculum was updated.
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12 228 According to Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group), however, there is “room for
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14 229 improvement” regarding communication training for both physicians and pharmacists.
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17 230 Opinions regarding coverage of vaccination topics in medical school differed. Most participants felt
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19 231 that physicians received only limited and “superficial” training on vaccination. According to Mr.
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21 232 Tiefenbacher (physician, Swiss association of paediatricians), vaccination is a topic that receives only
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23 233 “marginal” attention in medical school. He pointed out: “I cannot remember many vaccine-specific
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25 234 lectures [in medical school], let alone practical courses. (...) When I talk to medical students or have
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27 235 master students with me who are in their fourth year [of medical school], or when I do one-on-one
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29 236 student tutoring, vaccination for them is still a closed book.”
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32 237 In terms of post-graduate training, according to both physician and pharmacist participants,
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34 238 pharmacists who have acquired the post-graduation vaccination certificate have obtained
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36 239 “outstanding and stringent” training. In contrast, regarding post-graduate medical residency training,
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38 240 some participants considered that the vaccination issues were not discussed in enough detail. Mr.
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40 241 Tiefenbacher (physician, Swiss association of paediatricians) expressed wishing to be confronted with
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42 242 vaccination questions “from the beginning on and more frequently” during post-graduate residency
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44 243 training.
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47 244 Participants felt that pharmacists’ competence is ensured by continuing training they must undergo,
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49 245 to maintain their vaccination certification. In contrast, physicians do not have to obtain any
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51 246 continuing vaccine education. One pharmacist (Mr. Nagy, pharmacist, head of a community
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53 247 pharmacy chain) argued how it is in the interest of physicians to receive additional training: “It is a
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55 248 question of individual will. This is the advantage pharmacists have over physicians.” However, Mr.
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3 249 Meyer (chief physician, public health department) considered that regarding formal requirements for
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5 250 vaccination administration, too much is required of pharmacists, whereas too little is demanded of
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7 251 physicians. In his view, the rules for continuing education should be the same for both professions.
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11 12 253 **Lack of inter-professional cooperation between physicians and pharmacists**

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16 254 In this section, we discuss stakeholders' different perspectives on inter-professional cooperation
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18 255 between physicians and pharmacists when it comes to vaccination, a matter on which the interviews
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20 256 revealed considerable disagreement. We illustrate the stakeholders' characterization of inter-
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22 257 professional cooperation and how it should best be organized.
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26 258 According to most participants, ample communication and good working relationships on the same
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28 259 professional level between physicians and pharmacists are important for collaboration to be
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30 260 effective. As stated by the stakeholders from both disciplines, there is an unmet need for better
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32 261 professional cooperation between physicians and pharmacists. Complex situations and uncertainties
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34 262 regarding vaccine supply, appropriate indications, and complications could thus be resolved
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36 263 together. Furthermore, incorporation of different physician and pharmacist perspectives would
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38 264 ultimately improve the quality of care. Participants expressed how inter-professional cooperation
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40 265 could allow "better access to and understanding of vaccination." Participants agreed that a primary
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42 266 goal of inter-professional cooperation would be to put the patient at the center. Mr. Müller
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44 267 (physician, Swiss Medical Association) succinctly summarized this point by arguing that vaccination
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46 268 needs to be "easy for the people, right? That's the point."
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51 269 Furthermore, participants argued how physicians and pharmacists should pursue common goals,
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53 270 such as providing the best possible medical care and improving vaccination rates. For example, Ms.
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55 271 Tanner (pharmacist, Swiss Pharmacists Association) stated, "[It's] not only the pharmacists. All actors
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57 272 are important here. We have to assure somehow that we all pull together. That we respond to the
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3 273 level of knowledge of patients or vaccine-hesitant people so that they can be convinced, and
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5 274 vaccination rates can be increased and health care costs reduced."
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8 275 However, participants described how, at present, inter-professional cooperation was mostly non-
9
10 276 existent. According to Ms. Dahl (physician, Swiss Society for General and Internal Medicine) the
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12 277 reason for the lack of inter-professional cooperation was clear: "Cooperation between physicians and
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14 278 pharmacists? I don't think there is any communication, sorry [laughs]." Mr. Meyer (chief physician,
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16 279 public health department) explained how he felt that physicians and pharmacists "put up with each
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18 280 other" but that there was "no cooperation." Mr. Müller (physician, Swiss Medical Association) even
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20 281 described inter-professionalism as an "illusion".
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26 283 According to participants, pharmacists' ability to vaccinate might be an important source of friction
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28 284 for some physicians and thus the lacking inter-professional cooperation. Mr. Zeller (physician, major
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30 285 swiss CAM hospital) stated that "prevention belongs in the hands of the physician." This sentiment
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32 286 was echoed by other physician stakeholders. A common stereotype among physicians, according to
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34 287 both medical and pharmacy stakeholders, was that pharmacists acted "like little physicians" when
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36 288 they vaccinate or provide vaccination counseling. Another sentiment participants described involved
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38 289 physicians having a "fear" of pharmacists overstepping their professional roles, which might bring
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40 290 physicians in general to develop a "competitive" attitude with pharmacists. Participants explained
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42 291 how there was a perception that pharmacists were "taking something away" from physicians by
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44 292 being allowed to vaccinate.
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48 293 Mr. Tiefenbacher (physician, Swiss association of paediatricians) explained this "skepticism" of
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50 294 physicians towards pharmacists by detailing how vaccination was often the only contact between the
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52 295 family physician and their healthy patients and that vaccination in pharmacies carried the potential
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54 296 to eliminate physician-patient contact entirely. He clarified that physicians' skepticism was
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56 297 attributable to the fact that pharmacists would try to sell "lots of things" in addition to vaccinations,
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58 298 since pharmacies nowadays resemble "general stores".
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5 300 Other participants stated that pharmacies were merely "an additional service" to the already existing
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7 301 ones. Mr. Nagy (pharmacist, head of a community pharmacy chain) explained: "Pharmacies provide
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9 302 care to individuals who have no family physician, who do not regularly see a physician, or have no
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11 303 contact with any medical professional. The only medical profession with which they have contact is
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13 304 the pharmacist. This will only *increase* immunization rates. There is no competition there, quite the
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15 305 opposite."

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18 306 Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group) similarly pointed to vaccination in
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20 307 pharmacies as "the best way" to reach people who never consult a physician.

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23 308 Ms. Bertschi (chief pharmacist, public health department) explained that pharmacists should apply
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25 309 all knowledge that they acquired during their training and that could be legally provided. Vaccination
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27 310 being included in pharmacists' training was an obvious area of pharmacists' expertise. Furthermore,
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29 311 all pharmacist participants stated that pharmacists, as trained HCPs, increasingly are considered key
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31 312 providers of preventive medicine in Switzerland.

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36 314 To improve the relationships between physicians and pharmacists, Mr. Nagy (pharmacist, head of a
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38 315 community pharmacy chain) argued that joint workshops on vaccination topics for physicians and
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40 316 pharmacists should be arranged. Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group)
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42 317 proposed joint social events to help physicians and pharmacists get to know each other better. Ms.
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44 318 Felder (physician, association of CAM physicians) echoed this thought, "I think that inter-professional
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46 319 cooperation can be fruitful. Together is always better than against each other, right?"

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49 320 However, two participants felt that further cooperation was not necessary. Mr. Zeller (physician,
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51 321 major CAM hospital) explained that this would lead to "complicate" rather than simplify matters.
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53 322 According to him, pharmacist-physician cooperation would lead to difficulties in defining who is in
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55 323 charge and responsible for vaccination decisions. Ms. Bertschi (chief pharmacist, public health
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3 324 department) also expressed skepticism: "Either the physician or pharmacist vaccinates. I do not see
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5 325 much inter-professional cooperation here."
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10 327 Self-dispensation of medication in physicians' offices as a "counterpart" to 11 12 13 328 vaccination in pharmacies

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16 329 Participating stakeholders discussed physicians' practice of selling medication in their offices directly
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18 330 to their patients (self-dispensation), thereby generating significant financial revenue, potentially at
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20 331 the disadvantage of the local pharmacy. On the other hand, vaccination in pharmacies might
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22 332 generate revenue for the pharmacy, potentially disadvantaging local office physicians.
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28 334 Several physician stakeholders reported that physicians and pharmacists should have "equal rights"
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30 335 by arguing that self-dispensation by physicians should be allowed in Swiss cantons where vaccination
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32 336 in pharmacies is allowed. Some pharmacists, however, noted that this was already largely the case.
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34 337 Cantons with liberal laws on self-dispensation by physicians typically also promote vaccination in
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36 338 pharmacies.
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41 340 Some pharmacists stated that self-dispensation and vaccination in pharmacies could not be directly
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43 341 compared because vaccination in pharmacies was based on compulsory postgraduate training and
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45 342 quality assurance requirements, whereas no further educational requirements are imposed on "self-
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47 343 dispensing" physicians. Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group) criticized this:
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49 344 "This is all political. Self-dispensation is an unregulated system that is wildly proliferating in doctors'
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51 345 offices. In contrast, vaccination in pharmacies is tightly regulated, and physicians and the authorities
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53 346 keep a close eye on us. It's about economic privileges."
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3 348 Despite the mentioned differences, both physician and pharmacist participants were overall
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5 349 confident that cooperation between the two professions will improve. However, participants
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7 350 discussed how pharmacists should not "push" and should "proceed in small steps," because it is
8
9 351 important that "trust must be built up and physicians must not get angry." This view was expressed
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11 352 by both physician and pharmacist stakeholders.
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17 354 **Vaccination in pharmacies as a strategy to increase vaccination rates**

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20 355 We asked participants about the extent to which physicians and pharmacists could play roles in
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22 356 increasing vaccination rates. Stakeholders explained that physicians and pharmacists play a key role
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24 357 in this regard by providing vaccine information to patients and clients. Ms. Zehnder (chief
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26 358 pharmacist, public health department) explained: "You have to provide people with information,
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28 359 awareness, and responsibility, without the specter of fear." Participants described it being essential
29
30 360 to inform patients and clients "skillfully" so that the advice does not cause resistance. Physicians and
31
32 361 pharmacists often face difficult questions on vaccination and need to take sufficient time for
33
34 362 counseling such clients. Providers should face up to "untruths," misinformation, and outdated
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36 363 information. Some stakeholders believed that misinformation leads to the development of
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38 364 "vaccination sceptics" or "vaccine-hesitant" people. Mr. Meyer (chief physician, public health
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40 365 department) argued how HCPs collectively needed to prevent this "minority" from "setting the
41
42 366 tone." Participants argued that it was important to educate vaccine-hesitant groups specifically. Mr.
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44 367 Müller (physician, Swiss Medical Association) and Ms. Tanner (pharmacist, Swiss Pharmacists
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46 368 Association) mentioned motivational interviewing techniques to better inform clients and guide
47
48 369 them towards their vaccine decisions. For Mr. Tschopp (pharmacist, Swiss Young Pharmacists Group),
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50 370 vaccination counseling required an "emotional and trusting" relationship between pharmacists and
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52 371 their clients. In his view, by providing correct and easily understandable information, the number of
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54 372 people willing to be vaccinated would increase.
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3 373 Two physicians specialized in complementary medicine stated that increasing vaccination rates in
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5 374 Switzerland is not a priority for them. Ms. Felder (physician, association of CAM physicians) explained
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7 375 that if the patient “had good reasons not to be vaccinated,” she would not try to persuade them to
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9 376 get vaccinated just to increase vaccination rates. Rather, she argued that by providing “transparent”
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11 377 and “individualized” vaccination counseling, patients should be able to make a more informed
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13 378 vaccination decision. In her view, this will ultimately lead to increased vaccination rates. Mr. Zeller
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15 379 (physician, major CAM hospital) put it bluntly: “I treat patients and not vaccination rates. My primary
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17 380 goal is to protect those [with vaccines] who want to be protected, and to counsel them as objectively
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19 381 as possible. Those who don’t want to be protected: well, they can do this, it’s their own
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21 382 responsibility.”
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26 383 Finally, pharmacy stakeholders suggested that different regulations in the Swiss cantons (states)
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28 384 should be harmonized. Ms. Tanner (pharmacist, Swiss Pharmacists Association) stated: “Each canton
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30 385 has different rules for vaccination in pharmacies - this makes no sense. The goal clearly is to increase
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32 386 vaccination rates in the whole country.”
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39 388 **DISCUSSION**

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43 389 In this study, we provide a detailed characterization of key Swiss medical and pharmacy
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45 390 stakeholders’ perspectives on vaccination in pharmacies. Stakeholders viewed both physicians and
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47 391 pharmacists as competent to provide vaccination counseling. By providing low threshold access to
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49 392 vaccination counseling, pharmacists play an important public health role, and vaccine administration
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51 393 in pharmacies increases vaccination rates. However, stakeholders noted only limited professional
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53 394 cooperation between pharmacists and physicians on vaccination and recommended improving
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55 395 collaboration.
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3 396 The results of this study show how physicians and pharmacists in Switzerland serve as major actors
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5 397 for providing high quality vaccination counseling and administering vaccines. This is in line with
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7 398 previous studies [11, 14, 17, 43, 44]. For example, previous research has shown how pharmacists
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9 399 have in-depth knowledge of physicochemical properties of drugs and vaccines, of pharmacology,
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11 400 pharmacokinetics, drug interactions, and adverse drug effects [45, 46]. Interviewed stakeholders
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13 401 discussed extensive pre- and post-graduate training as a key prerequisite for pharmacists'
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15 402 vaccination competence. Schaffer et al. (2008) point out how pharmacists' willingness to complete
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17 403 additional post-graduate vaccination training demonstrates their commitment and high level of
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19 404 interest in the topic of vaccination [47]. Previous authors recorded that pharmacy students in
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21 405 Switzerland receive more hours of training on vaccination topics as part of their curriculum than
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23 406 medical students [28]. Several of our participants mentioned this as evidence that pharmacists are
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25 407 well prepared for vaccination counseling and administration, perhaps even more so than physicians.
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30 408 Our results document a considerable potential for tension between physicians and pharmacists on
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32 409 the topic of vaccination. In a 2014 report from Ireland, general practitioners expressed concern
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34 410 about pharmacists vaccinating, questioning pharmacist's professional competence and ability to deal
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36 411 with vaccine-related complications in the pharmacy [33]. Interestingly, most Swiss physician
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38 412 stakeholders were supportive of vaccination in pharmacies as an important addition to vaccination in
39
40 413 physicians' offices. This could be interpreted as a favorable change in interprofessional attitudes in
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42 414 recent years, with a welcome emphasis on physicians' and pharmacists' shared goal of achieving
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44 415 success for national immunization programs by increasing vaccination rates. This phenomenon has
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46 416 similarly been observed in the UK, where resistance from general practitioners towards pharmacists
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48 417 vaccinating decreased over time [48]. Nevertheless, stakeholders also mentioned concerns about
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50 418 pharmacists who vaccinate, potentially interfering with the financial wellbeing of physicians, by
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52 419 taking customers and therefore revenue away from physicians. This is in line with previous reports
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54 420 [17, 33]. The direct comparison by our stakeholders of selling medication by physicians in practice
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56 421 with vaccination in pharmacies was an interesting observation that has not previously been
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3 422 documented in Switzerland [49]. Pharmacists' concerns about loss of income and authority has also
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5 423 been recorded in the US [35]. Importantly, selling medication constitutes a significant source of
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7 424 revenue for "self-dispensing" physicians, representing the second largest distribution channel in the
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9 425 Swiss drug market [23, 50]. In cantons where physician self-dispensation is allowed, the number of
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11 426 pharmacies is lower than in the other cantons [37].
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15 427 Our findings underline the importance of considering financial aspects and highlight the extent to
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17 428 which such decisions are politically charged and likely need to be resolved at a higher political level.
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19 429 As the Swiss Federal Office of Public Health mentioned in a 2016 report, inter-professional
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21 430 cooperation might meet fewer obstacles in cantons without self-dispensation of medicines by
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23 431 physicians [23, 36]. In addition, the perceived potential for financial competition between physicians
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25 432 and pharmacists in the private sector may provide a possible explanation for the currently limited
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27 433 degree of cooperation between these professional groups.
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31 434 Similar to what has been shown in a previous report [31] and other research, study participants
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33 435 discussed how inter-professional cooperation in the field of vaccination is likely to facilitate access to
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35 436 vaccination information and delivery [14, 17], heightened awareness concerning vaccinations, and,
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37 437 consequently, increased immunization rates [10, 51, 52]. This may concern particularly people with
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39 438 previously little contact with healthcare systems, such as adolescents and healthy adults who have
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41 439 no regular physician or socio-economically disadvantaged groups [14, 46]. Pharmacy and physician
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43 440 stakeholders underscored how active communication and the provision of high quality information
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45 441 on vaccination by the provider increases vaccination rates. This is in keeping with previous
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47 442 observations, such as those of Grabenstein et al (1998) who found that patients are more likely to be
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49 443 vaccinated if they were approached actively by the provider [17]. Active initiation of the conversation
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51 444 by the provider, and the use of motivational interviewing [53] may be useful to respond to patient
52
53 445 needs [54]. Motivational interviewing has already been applied in the field of vaccination and has
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55 446 been shown to be an effective approach in increasing vaccination intention and vaccination rates
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57 447 when used by both pharmacists [54] and physicians [55, 56].
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STRENGTHS AND LIMITATIONS

451 Strengths of this study include a qualitative approach, which allowed us to gain a deeper
452 understanding of the topic of vaccination in pharmacies from the participants' own perspectives. Our
453 results provide novel insights into the opinions of key Swiss experts with both medical and pharmacy
454 backgrounds. This is an understudied aspect in the field of vaccination services. By including
455 stakeholders from German- and French-language regions of Switzerland, from public health,
456 professional pharmacists and physicians organisations, complementary medicine and biomedicine,
457 we obtained detailed insights into the views of a wide variety of key actors.

458 Qualitative studies have limitations. Our results reflect the opinions of a limited number of experts
459 and should not be generalized. For qualitative interviewing, the interviewer effect [7] and the social
460 desirability bias [57] may affected the information obtained. Given that our data was collected in the
461 German- and French-speaking regions of Switzerland, translation of interviews into English might
462 have altered the meaning of some statements due to language-specific nuances. That being said,
463 language-related issues were discussed among the multilingual team throughout data analysis. These
464 limitations can be addressed by including our study findings into future quantitative research that
465 aims at studying similar issues on a wider scale.

CONCLUSION

467 Our results suggest that promoting the integration of pharmacists as vaccine counselors and vaccine
468 administrators should be considered to maintain successful national immunization programs. Health
469 policymakers should consider more actively encouraging inter-professional cooperation between
470 physicians and pharmacists which currently seems limited in Switzerland. Participants criticized the
471 lack of uniform regulation for vaccination in pharmacies throughout Switzerland. Active initiation of

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3 472 discussion of vaccines by pharmacists and physicians with their patients and providing high quality
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5 473 vaccination advice may further contribute to increased immunization rates and improved
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7 474 coordination between healthcare professionals in Switzerland.
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10 11 475 **ACKNOWLEDGEMENTS** 12 13

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15
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17
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19
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21 22 479 **AUTHOR CONTRIBUTIONS** 23 24 25

26 480 **MJ** coordinated qualitative data collection and evaluation and drafted the manuscript. **JT** and **MA**
27
28 481 participated regularly in study advisory board meetings and provided regular inputs about the
29
30 482 qualitative results. **MJD** took a lead role in establishing the study's qualitative methodologies and
31
32 483 provided regular study supervision, inputs about the qualitative results and valuable feedbacks
33
34 484 during the manuscripts writing. **PET** is the principal investigator, directed the funding request and
35
36 485 supervised the conduct of the study. He provided infectious disease and general medical expertise,
37
38 486 and oversaw study conception, design, data collection, analysis and interpretation.
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3 487 All authors read, contributed to and approved the final manuscript.
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5

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11
12 490 Switzerland.
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16 491 **COMPETING INTERESTS**
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19 492 None declared.
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23 493 **DATA AVAILABILITY STATEMENT**
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26 494 Data are available upon reasonable request.
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28

29 495 **ETHICS STATEMENT**
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32 496 The study was approved by the local ethics committee, Ethikkommission Nordwest- und
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34 497 Zentralschweiz (EKNZ), project-ID: 2017-00725
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Qualitative Interview Guideline pour les acteurs des autorités sanitaires, de la gestion, des associations

- 1) Pourriez-vous vous présenter brièvement et parler un peu de votre travail (titre) ?
 - En quoi consiste votre travail ?
 - Depuis combien de temps travaillez-vous dans le cadre de votre poste actuel ?
- 2) Pour notre programme national de recherche sur les décisions de vaccinations, nous comparons les points de vue de la médecine conventionnelle et de la médecine complémentaire sur la vaccination.
Pouvez-vous nous dire ce que vous pensez de la médecine conventionnelle ? Et de la médecine complémentaire ?

La vaccination : Convictions, coûts

- 3) Que pensez-vous de la vaccination ?
- 4) Dans le cadre de vos fonctions actuelles, êtes-vous en contact direct avec les patients/clients pour des questions liées à la vaccination ? Si oui, quelles sont les questions posées ?
- 5) Pensez-vous que le coût des vaccinations influence les décisions des gens ? Pourquoi ou pourquoi pas ?
- 6) Selon vous, quelle est la probabilité que les vaccinations et les conseils de vaccination en pharmacie soient remboursés par l'assurance de base à l'avenir ?
 - Pensez-vous que cela augmenterait le taux de vaccination ?
(Par exemple, les vaccinations contre la grippe dans les pharmacies sont déjà couvertes par certains régimes d'assurance complémentaire).

Croyances en matière de vaccination, la pratique de la vaccination et les recommandations de vaccination pour les clients et les patients

- 7) Où obtenez-vous vos informations sur les vaccinations ?
 - Exemple : collègues, plan de vaccination suisse/BAG, approche médicale
- 8) Selon vous, qui sont les professionnels de la santé compétents pour donner des conseils en matière de vaccination ? Pourquoi ? (exemple: si les pharmaciens ne sont pas mentionnés, demandez)
 - a) Que faut-il pour être compétent en matière de conseils de vaccination ?
- 9) Comment peut-on s'assurer que les médecins et les pharmaciens soient à jour en matière de vaccination ?
- 10) Pensez-vous que quelque chose devrait être changé dans la formation des pharmaciens et des médecins sur la vaccination et les conseils de vaccination ? Si oui, quoi ?
- 11) Pensez-vous qu'une coopération interprofessionnelle des pharmaciens et des médecins serait bénéfique pour augmenter les taux de vaccination ?
 - Comment pourriez-vous imaginer une telle coopération ?
 - L'Office fédéral de la santé publique doit-il intervenir au niveau fédéral ?
 - Exemple : cours de formation continue communs
- 12) Pourquoi les taux de vaccination sont-ils si différents d'un canton à l'autre ?

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2
3 13) Dans certains cantons, les pharmaciens ne sont autorisés à administrer que certains vaccins
4 (par exemple, le vaccin contre la grippe, encéphalite à tique (FSME)) ou seulement à certaines
5 personnes (par exemple, âge >16 ans).
6 • Quelle est votre position à ce sujet ?
7 • Cette réglementation (quels vaccins peuvent être administrés par une pharmacie à
8 quelles personnes) devrait-elle être uniforme à l'échelle nationale?
9
- 10
11 14) Que faut-il faire en Suisse pour augmenter les taux de vaccination et contre le scepticisme à
12 l'égard de la vaccination ?
13 • Quel est le rôle des autorités sanitaires, des médecins et des pharmaciens ?
14
- 15 15) 1) A votre avis, les personnes en Suisse sont-elles suffisamment vaccinées ?
16 • Cette approche ne pourrait-elle être utilisée que pour le vaccin contre la grippe ?
17 • Pour le vaccin HPV ?
18 • Pour le vaccin rougeole ?
19
- 20 16) La vaccination en pharmacie est-elle un moyen efficace d'augmenter les taux de vaccination ?
21 • Cette approche ne pourrait-elle être utilisée que pour le vaccin contre la grippe?
22 • Pour le vaccin HPV ?
23 • Pour le vaccin rougeole ?
24
25
- 26 17) Avez-vous remarqué des changements ces dernières années depuis 2015, quand la vaccination
27 est devenue possible dans les pharmacies en Suisse ?
28 • En ce qui concerne les taux de vaccination
29 • En ce qui concerne les coûts de la santé
30
- 31 18) Pensez-vous que les vaccinations devraient être une décision individuelle pour les familles?
32 • Pourquoi ou pourquoi pas ?
33 • Les considérations de santé publique doivent-elles jouer un rôle (par exemple,
34 l'immunité de groupe) ?
35 • Pourquoi ou pourquoi pas ?
36
37
- 38 19) Dans certains pays, une vaccination obligatoire a été envisagée ou existe déjà. Qu'en pensez-
39 vous ?
40 • En avez-vous déjà discuté avec vos collègues ?
41
- 42 20) Aujourd'hui, il est parfois compliqué de se faire vacciner
43 • Exemple pour le vaccin HPV - 26 programmes cantonaux de vaccination différents
44 • Exemple : programmes de vaccination scolaire dans certains cantons, mais pas dans
45 tous
46 - Existe-t-il des moyens de simplifier le processus de vaccination en Suisse ?
47

48 Conclusion

- 49
50 21) En conclusion, quels sont les éléments les plus importants à considérer concernant la
51 vaccination dans les pharmacies ?
52
53 22) Est-ce que vous aimeriez clarifier quelque chose dont nous avons discuté ? Aimeriez-vous
54 rajouter quelque chose ? Vous avez des questions pour moi ?
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Qualitative Interview Guideline für die Stakeholder von Gesundheitsbehörden, Geschäftsleitungen, Verbänden

- 1) Können Sie etwas über sich selbst und kurz über Ihren Job(-titel) erzählen?
 - Was gehört zu Ihrem Aufgabenbereich?
 - Wie würden Sie sich einer Kolleg*in vorstellen?
 - Wie lange arbeiten sie schon an Ihrem aktuellen Arbeitsort?
- 2) Für unser Nationales Forschungsprogramm zu Impfskepsis vergleichen wir die Ansichten der Schul- und Komplementärmedizin in Bezug auf Impfungen. Könnten Sie etwas dazu sagen, wie Sie zu Schul- und Komplementärmedizin stehen ?

Impfungen: Überzeugungen, Kosten

- 3) Was denken Sie über Impfungen?
- 4) Haben Sie direkten Kontakt zu Patient*innen/Kund*innen über Impffragen in Ihrer jetzigen Funktion? Wenn ja, welchen?
- 5) Haben Sie das Gefühl, dass die Kosten der Impfungen die Entscheidung der Leute beeinflusst? Warum oder warum nicht?
- 6) Was denken Sie, wie stehen die Chancen, dass Impfungen und Impfberatungen in Apotheken von der Grundversicherung in Zukunft vergütet werden?
 - Denken Sie das würde die Impfrate steigern?
(Z.B. werden Influenza Impfungen in Apotheken von manchen Zusatzversicherungen bereits übernommen.)

Impfkenntnisse, Impfpraxis und Impfeempfehlungen:

- 7) Wo informieren Sie sich über Impfungen?
 - Probe: Kolleg*innen, Schweizer Impfplan/BAG, spezifischer medizinischer Ansatz, Internet, Literatur/Bücher, ...
- 8) Welche Medizinalpersonen sind Ihrer Meinung nach kompetent, Impfberatungen zu machen? Warum? (probe: Falls Apotheker*innen nicht erwähnt werden, nachfragen)
 - Was braucht es um kompetent für Impfberatung zu sein?
- 9) Wie kann sichergestellt werden, dass Ärzt*innen und Apotheker*innen in Bezug auf Impfungen auf dem neusten Stand sind?
- 10) Sollte man Ihrer Meinung nach etwas an der Ausbildung der Apotheker*innen und Ärzt*innen über Impfen und Impfberatung ändern? Wenn ja, was?
- 11) Denken Sie eine interprofessionelle Zusammenarbeit der Apotheker*innen und Ärzt*innen wäre von Vorteil um die Impfraten zu erhöhen?
 - Wie könnten Sie sich so eine Zusammenarbeit vorstellen?
 - Muss das Bundesamt für Gesundheit auf Bundesebene eingreifen?
 - Probe: gemeinsame Fortbildungen
- 12) Warum unterscheiden sich die Impfraten in den einzelnen Kantonen so stark?
 - Woran liegt das?

- 1
2
3 13) In einigen Kantonen dürfen Apotheker*innen nur bestimmte Impfungen (z.B. Grippeimpfung,
4 FSME) oder nur an bestimmte Personen durchführen (z.B. Alter >16).
5 • Wie stehen Sie dazu?
6 • Sollten diese Bestimmungen (welche Impfungen darf eine Apotheke bei welchen
7 Personen durchführen) landesweit einheitlich werden?
8
9
10 14) Was soll in der Schweiz gemacht werden, um die Impfraten zu erhöhen und der Impfskepsis
11 entgegenzuwirken?
12 • Welche Rolle spielen da die Gesundheitsbehörden, die Ärzt*innen und die
13 Apotheker*innen?
14
15
16 15) Sind Ihrer Meinung nach in der Schweiz die Leute genug geimpft?
17 • Grippe
18 • HPV
19 • Masern
20
21
22 16) Ist das Impfen in den Apotheken ein wirksames Mittel, um die Impfraten zu erhöhen?
23 • nur bzgl. Grippeimpfung?
24 • auch bzgl. HPV Impfung?
25 • auch bzgl. Masernimpfung?
26
27
28 17) Merken Sie Veränderungen in den letzten Jahren, seit das Impfen in Apotheken in der
29 Schweiz möglich ist (seit 2015)?
30 • bzgl. Impfraten
31 • bzgl. Gesundheitskosten
32
33
34 18) Denken Sie Impfungen sollten eine individuelle Entscheidung für Familien sein?
35 • Warum oder warum nicht?
36 • Sollten Public Health Überlegungen eine Rolle spielen (z.B. Herdimmunität)?
37 • Warum oder warum nicht?
38
39
40 19) In einigen Ländern wurde ein Impfblogatorium in Betracht gezogen oder es besteht bereits
41 eines. Wie stehen Sie dazu?
42 • Haben Sie schon mal mit Ihren Kolleg*innen darüber diskutiert?
43
44
45 20) Heute ist es teils kompliziert, sich impfen zu lassen
46 • Bsp.: HPV – 26 verschiedene kantonale Impfprogramme
47 • Bsp.: Schul-Impfprogramme in gewissen aber nicht in allen Kantonen.
48 • Gibt es Möglichkeiten, um den Impfprozess in der Schweiz zu vereinfachen?
49 • Könnte das Impfen in Apotheken dabei helfen?
50

51 Schlussfolgerung

- 52
53 21) Als Schlussfolgerung, was sind Ihre wichtigsten Überlegungen zum Impfen in Apotheken?
54
55 22) Möchten Sie noch etwas klarstellen/berichtigen? etwas ergänzen? Haben Sie Fragen?
56
57
58
59
60

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	
Occupation	3	What was their occupation at the time of the study?	
Gender	4	Was the researcher male or female?	
Experience and training	5	What experience or training did the researcher have?	
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	
Sample size	12	How many participants were in the study?	
Non-participation	13	How many people refused to participate or dropped out? Reasons?	
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	
Field notes	20	Were field notes made during and/or after the interview or focus group?	
Duration	21	What was the duration of the interviews or focus group?	
Data saturation	22	Was data saturation discussed?	
Transcripts returned	23	Were transcripts returned to participants for comment and/or	

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	
Description of the coding tree	25	Did authors provide a description of the coding tree?	
Derivation of themes	26	Were themes identified in advance or derived from the data?	
Software	27	What software, if applicable, was used to manage the data?	
Participant checking	28	Did participants provide feedback on the findings?	
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	
Data and findings consistent	30	Was there consistency between the data presented and the findings?	
Clarity of major themes	31	Were major themes clearly presented in the findings?	
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.