



## Midwives' perception of advantages of health care at a distance during the COVID-19 pandemic in Switzerland

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### ABSTRACT

**Objective:** To explore midwives' perceptions of the advantages of telemedicine during the COVID-19 pandemic in Switzerland.

**Design:** Cross-sectional study based on an online survey using quantitative methods.

**Setting:** Midwives working in Switzerland.

**Participants:** Self-selected convenience sample of 630 members of the Swiss Federation of Midwives.

**Measurement:** Open questions on advantages of health care at a distance and workrelated characteristics were used in the online questionnaire. The information was coded and integrative content analysis was applied.

**Findings:** A good half of the respondents associated telemedicine with either an advantage beyond the pandemic ("Reduced workload", "Improved health care provision", "Greater self-care of clients"), while the others saw a pandemic-related advantage ("Protection from COVID-19", "Maintaining care/counseling in an exceptional situation"), or no advantage at all. Older, more experienced midwives were less likely to see an advantage beyond the pandemic. The motive "Reduced workload" was positively associated with professionals aged younger than 40 years and midwives with up to 14 years of professional experience, and "Protection from COVID-19" was more likely cited by midwives aged 50 and more and by midwives working solely in hospitals. Midwives who stated "Maintaining care" and "Improved health care provision" as motives to embrace telemedicine were more likely to experience health care at a distance as a positive treatment alternative.

**Key conclusion:** Midwives' perceptions of the advantages of health care at a distance vary substantially with age and years of professional experience, as well as workrelated characteristics. Further research is necessary to acquire a sound understanding of underlying reasons, including the sources of the general attitudes involved. Implication for practice: Understanding the differences in perceptions of health care at a distance is important in order to improve the work situation of midwives and the health care they provide to women and families. Different sensitivities represent an important source in the ongoing discussion about the future use of telemedicine in health care.

### Introduction

The COVID-19 pandemic has affected both maternity care and the work of midwives (Vivilaki and Asimaki, 2020). Not only has the entire health care environment changed in the face of public health imperatives (Renfrew et al., 2020), the way women are supported and cared for has undergone a notable transformation (Jardine et al., 2021; Montagnoli et al., 2021). To prevent transmission of the Sars-CoV-2

virus, midwives have been obliged to use forms of telemedicine on an unprecedented scale (Galle et al., 2021). Telemedicine, also known as health care at a distance, is not a new way of providing health care. While controversial, until the current pandemic telemedicine was mostly discussed in an abstract manner if at all (Merrell and Doarn, 2019). With COVID-19, however, video telephony, text messaging, and other forms of telemedicine have moved center stage, raising the question of how healthcare at a distance is experienced and perceived by midwives.

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Prior to the COVID-19 pandemic, health professionals in general were often portrayed as having a difficult relationship to telemedicine (Gerlof, 2020; Grassl et al., 2018; Koivunen and Saranto, 2018; Terry et al., 2019). By contrast, more and more (mostly qualitative) studies have demonstrated that midwives' and other health professionals' perception of telemedicine is anything but negative (e.g., Lanssens et al., 2019; Lindberg et al., 2007; McCarthy et al., 2020). With the pandemic, health professionals in general have become increasingly aware of the benefits and potential of telemedicine (e.g., Elawady et al., 2020; Lakshin et al., 2021). At the same time, sensitivity to the weaknesses and limitations of digital media has reportedly increased (e.g., Florea et al., 2021; Galle et al., 2021; Liberati et al., 2021).

Little is yet known about how this new experience of health professionals in general, and midwives in particular, has affected their attitudes toward telemedicine use beyond the pandemic. This seems surprising in light of the ongoing intensive discussion about how the use of digital media should be designed after the pandemic (Bashshur et al., 2020; Kasaven et al., 2020; Vilendrer et al., 2020). Examining midwives' perceptions of advantages of telemedicine is also essential because telemedicine seems to challenge "presence", which constitutes a central component of midwives' professional philosophy (Pembroke and Pembroke, 2008), and there is a need for empirical data on the relationship between telemedicine and this key component of professional philosophy.

The purpose of the present study was to determine the extent to which midwives associate health care at a distance with advantages beyond the pandemic, that is, how they perceive telemedicine as a permanent component of health care provision. In a first step, we wanted to know how midwives felt about telemedicine: whether they saw any benefits beyond the pandemic and what benefits, pandemic-related or otherwise, they associated with telemedicine. The second step was to explore how the advantages associated with telemedicine vary according to the midwives' age and professional experience in years, their work setting, and their experience working with telemedicine and how they were reimbursed for it.

According to Hunter (2004), the perception of a professional activity, such as the use of telemedicine, cannot be understood as separate from the two fundamentally different ideologies prevailing in midwifery ("with institution", "with women"), which are anchored in the work setting (hospital midwifery vs. community-based midwifery). We hypothesised that midwives working in a more medically dominated setting such as a hospital would be more likely to associate the advantages of health care at a distance with the public health crisis and the pandemic than community-based midwives with their individualized and women-centered approach.

Other important factors for differences in the perception of telemedicine are age (Geraghty et al., 2019; McDonald et al., 2016; Taipale, 2016) and work experience (in years) (Bourdieu, 1993; Henriksen and Lukasse, 2016; Parsons and Griffiths, 2007). We expected that younger midwives and those with less work experience would tend to associate the advantages of health care at a distance beyond the pandemic compared to their senior colleagues. Moreover, we assumed that midwives with a positive experience in using telemedicine and midwives who had been reimbursed for providing care at a distance would be more likely to see advantages of health care at a distance beyond the pandemic.

To assess the significance of the pandemic for midwives' beliefs about health care at a distance, we set up a study to examine midwives' perceptions of telemedicine during the current pandemic in Switzerland.

## Methods

### Setting and sample

Midwifery care in Switzerland is characterised by a strong medical dominance (Brailey et al., 2017). The majority of midwives work on

the labour ward in hospitals, where they care for labouring women or women in the postpartum period (with an average of 4.4 days in the hospital) (see Erdin Springer et al., 2017; Grylka and Borner, 2020). A second large area of work is community-based postnatal care by self-employed midwives, covered under mandatory health insurance until the 56th day after birth. Antenatal care is predominantly provided by gynaecologists, even though the provision of midwife-led antenatal care has increased in recent years (Erdin Springer et al., 2017; Grylka and Borner, 2020).

We conducted a cross-sectional study based on an online survey using quantitative methods. Data were collected from 11 to 26 May 2020 in the context of a research project aimed at understanding midwives' experiences with and perceptions of health care at a distance during the COVID-19 pandemic. The study population included all members of the Swiss Federation of Midwives (SHV/FSSF). The Swiss Federation of Midwives represents the interests of employed and self-employed midwives vis-à-vis the authorities, employers and other organisations, and membership is open to all active midwives. The membership fee is CHF 290 for the national association and an additional smaller amount for the regional section (of which one automatically becomes a member) and includes a subscription to the Federation's magazine. In 2020, 75.7% of the 3346 members of the Swiss Federation of Midwives came from German-speaking Switzerland, 21.6% from French-speaking Switzerland, and 2.7% from Italian-speaking Switzerland; only a few members were male (SFM, Swiss Federation of Midwives, 2020). A total of 742 midwives participated in the survey, and 630 completed the questionnaire and constitute the sample for this study. The response rate was 18.8%. Representatives of the Federation of Midwives contacted members directly by email and provided information about the survey as well as a link to the online questionnaire. Respondents received no financial incentive.

When the data for this survey was collected, Switzerland was in its first coronavirus lockdown (the country had gone into lockdown on 16 March 2020). As elsewhere, women were sent home earlier than usual after giving birth, increasing the overall workload for community-based midwives. Moreover, midwives were under enormous pressure due to a lack of resources, equipment, and support from the authorities, the constant risk of infection, and the mental strain caused by the illness or death of colleagues, friends, and patients (see Coxon et al., 2020; González-Timoneda et al., 2020; Semaan et al., 2020). Against this backdrop, health care at a distance could be considered as a form of work relief for midwives by reducing the risk of infection or of another burden. However, due to the evolving situation, there was a great deal of uncertainty. All the more so since the Federal Office of Public Health only obliged health insurance companies to reimburse midwives for providing health care at a distance in April and to cover per midwife a mere five telephone consultations instead of visits until the end of June 2020.

### Questionnaire

Respondents were given a questionnaire consisting of 17 questions (see Table 5). The demographic section included questions about respondents' age (in years), gender, professional experience (in years), work setting (hospital, outpatient, or home settings). If they provided telemedicine, respondents were asked how they "experienced necessary and/or urgent examinations, treatments, and therapies at a physical distance" as well as if they received any reimbursement by health insurance companies for services they were providing using forms of telemedicine. Finally, the questionnaire contained open questions on advantages and disadvantages of health care at a distance, such as "What do you perceive to be the advantages and opportunities of examinations, treatments (including consultations), and therapies at a physical distance?"

The questionnaire was provided in the three national languages of Switzerland, German, French, and Italian. All three language versions were translated and checked by a native speaker. As the data collected were anonymized, institutional review board approval was not required.

**Table 1**  
Coding scheme.

Category name	Coding rule	Sample responses
<b>Category A: Advantages beyond the pandemic</b>	The advantages of health care at a distance are seen beyond the pandemic.	
Sub-category A1: Reduced workload	One advantage of health care at a distance is seen in a reduced workload. This refers in particular to the elimination of travel time for home visits.	"Saving time", "Saving travel time", "The appointment is done efficiently", "Shorter investigations", "I worked more expeditiously", "It boils down to the essentials", "Working more efficiently"
Sub-category A2: Improved health care provision	One advantage of health care at a distance is seen in the opportunity to develop new forms of health care that complement the existing health care provision.	"Expansion of already existing forms of care in hospitals/at home visits", "In case of questions/ uncertainties the women call more often", "on the phone maybe sometimes more is said than in a one-on-one meeting", "Prompt clarification of the most important questions", "the women could call several times a day"
Sub-category A3: Greater self-care of the clients	The advantages of health care at a distance are associated with women being less dependent on health care workers and taking a more active role regarding their health and in their relationship with their baby.	"Strengthening women's/family's self-reliance", "Postpartum women are empowered to be independent", "Clients needed to gain some independence", "Women's self-reliance & self-competence is promoted"
<b>Category B: Pandemic-related advantages and no advantages</b>	The advantages of health care at a distance are seen pandemic-related or not.	
Sub-category B1: Maintaining care/counselling in an exceptional situation	The advantages of health care at a distance are associated with maintaining care/counselling in an exceptional situation.	"Allowing the relationship to be maintained in the event of a health crisis", "Better than no treatment at all, but can never fully replace treatment in person", "Do not see any advantages in care at a distance, only in pandemic situations!", "No opportunities, but it has been necessary and therefore feasible", "It is a temporary solution".
Sub-category B2: Protection from COVID-19	The advantages of health care at a distance are seen in the protection of midwives as well as pregnant women, women who have recently given birth, and their families from COVID-19 infection.	"Self-protection and protection of the family", "No risk of contagion", "The midwife does not have to expose herself to the risk of infection", "Staying healthy oneself", "No risk of contagion".
Sub-category B3: No advantages	No advantages are seen in treatment at a distance.	"No advantages", "Do not really see any advantages in it", "For me, none of the options replace direct contact", "There are no advantages, it's damaging to the reputation"

### Data preparation and analysis

Früh's (2017) integrative content analysis was used to analyse the answers to the open questions. Integrative content analysis combines an analytical-deductive with an interpretative-inductive approach. In a first step, we organised the responses to the open questions according to the main research interest into a first main category we called "Advantage motives beyond the pandemic" and a second main category, which was provisionally designated as "Other advantage motives".

In a second step, based on a repeated review of all responses ( $n = 523$ ), six clearly distinguishable types of responses were identified, and sub-categories defined (see coding scheme in Table 1). In accordance with Früh (2017), we were interested not only in manifest but also in latent motives and aligned the sub-categories as much as possible with theoretically and/or empirically founded concepts. Based on the review article by (Billings et al., 2021), the guiding themes were "physical health, safety and security" and "workload", and "ethical, moral and professional dilemmas" in dealing with the feeling of falling "short of the [...] usual standards of care". In addition, "self-care" (Siminerio et al., 2014), "efficiency" (Henderson et al., 2013), "improved health care" (DeNicola et al., 2020), and "presence" (Pembroke and Pembroke, 2008; Gibson, 2020), which are central to the telehealth debate, served as points of reference. For example, the topic of "physical health, safety and security", resulted in the sub-category "Protection from COVID-19". Moreover, the label of the second main category was definitely determined as "Pandemic-related advantages and no advantages".

In a next step, we applied the coding scheme to all responses, concentrating on respondents' most spontaneous first answer, which was felt to best reflect their view. Following this, the reliability of the coding scheme was checked by applying it to the text material using an external coder. The reliability coefficient was calculated according to

Holsti (1969) by the relative number of pairwise matches for all codings, amounting to 85.3% with 446 overlaps and 523 codings, which is considered good by Neuendorf (2002: 143).

Age (in years) was recoded into three groups that are roughly equal in size and include the difference between "digital immigrants" (born before 1980) and "digital natives" (born later) (Prensky 2001a, 2001b): " $\leq 39$ ", "40-49" and " $\geq 50$ ". Professional experience (in years) was also grouped into three equally sized categories: " $\leq 14$  years", "15-24 years", " $\geq 25$  years".

Work setting was recoded according to Hunter (2004) to "Working solely in hospitals", on the one hand, and "Working solely in community settings & working in hospitals as well as community settings", on the other. Reimbursement was simplified and dichotomized into "Yes & Partially" and "No", transforming "I do not know" to "no answer". Regarding experience with telemedicine, "rather positive" and "positive" were recoded to "positive" and "rather negative" and "negative" to "negative", again transforming "I do not know" to "no answer".

To find out the underlying causes of the advantage motives, Pearson's chi-square tests were performed with the factors age, years of professional experience, work setting, reimbursement and experience with telemedicine, on the one hand, and the main categories ("advantages beyond the pandemic" vs. "pandemic-related advantages or no advantages all") and the six sub-categories, on the other. Gender could not be included in the analysis due to the low proportion of men in the sample. For cell sizes of less than five individuals, the more restrictive Fisher's test was carried out. For statistically significant relationships, a post hoc column comparison was conducted with Bonferroni adjusted p-values in order to determine significant differences. The level of significance was set for p-values  $< 5\%$ . Statistical analysis was performed with SPSS Version 27.0.

**Table 2**  
Demographic and work-related characteristics.

Measure	n (%)
Age	
≤39	193 (30.6)
40–49	178 (28.3)
≥50	259 (41.1)
Gender	
Female	625 (99.2)
Male	5 (0.8)
Professional experience	
≤14 years	203 (32.2)
15–24 years	199 (31.6)
≥25 years	228 (36.2)
Work setting	
Working solely in hospitals	33 (5.3)
Working in hospitals & in community settings	200 (31.8)
Working solely in community settings	395 (62.9)
Reimbursement	
Yes	82 (19.4)
Partially	277 (65.6)
No	63 (14.9)
Experience with health care at a distance	
Positive experience	198 (40.7)
Negative experience	288 (59.3)

## Findings

### Respondent characteristics

Respondents were predominantly female (99.2%). They had a mean age of 46.2 years (SD = 10.1; range 25–68) and a mean professional experience of 20.5 years (SD = 10.1; range 1–47; see Table 2). The sample included 77.8% German-speaking, 18.9% French-speaking, and 3.3% Italian-speaking midwives. Among the midwives surveyed, 62.9% worked solely in community settings, 5.3% solely in hospitals, and 31.8% in both settings. Regarding the single item on experiences with telemedicine, 40.7% of respondents reported positive experiences, while 59.3% reported negative experiences.

### Perception of advantages

Regarding the perception of advantages, two groups were identified: 55.3% of respondents reported advantages beyond the pandemic, whereas 44.7% named pandemic-related advantages or found there to be no advantages at all.

In the first group, the reason mentioned most frequently was that telemedicine reduces the workload (31.5% of all respondents), followed by the improvement of health care provision (18.9%). A small percentage noted an increase in clients' self-care (4.8%).

In the second group, some respondents stated a preference for maintaining a level of care in an exceptional situation (15.9%) or protection from COVID-19 (8.2%). One in five respondents (20.7%) stated that they did not believe that health care at a distance had any benefits or opportunities at all. This last subgroup was included in the second group because of the research question's focus on benefits beyond the pandemic, especially since there was overlap in substance with the other two subgroups: Midwives in this subgroup did not appear to dispute the benefits of health care at a distance in reducing contagion and placed a high value on being present with women (which, however, they interpreted rather literally).

### Associations with sociodemographic and work-related characteristics

To examine the relationship between age and the main categories ("Advantages beyond the pandemic" vs. "Pandemic-related advantages

or no advantages at all"), a chi-square test of independence was performed. The results showed that there is a significant association between age and the main categories (chi-square (2) = 14.4,  $p = 0.001$ ,  $n = 523$ ). The effect size according to Cohen (1988; Cramer's  $V = 0.166$ ) is small. The younger the midwives, the more they tended to associate telemedicine with an advantage beyond the pandemic. Bonferroni-adjusted post-hoc analysis revealed that midwives aged 39 years and younger were significantly more likely to indicate an advantage beyond the pandemic than their colleagues aged 50 and older ( $p < 0.001$ ; see Table 3).

If we look at the subcategories, we see a similar pattern. The association of age with the subcategories was determined by a chi-square test. The test results showed that there is a significant association between age and respondents' responses (chi-square (10) = 30.6,  $p = 0.001$ ,  $n = 523$ ). The effect size according to Cohen (1988; Cramer's  $V = 0.171$ ) is large. Post-hoc comparison with a Bonferroni correction revealed that, first, midwives aged 39 years and younger were significantly more likely to indicate reduced workload as an advantage than their colleagues aged 40 to 49 years ( $p = 0.002$ ) and aged 50 years and older ( $p < 0.001$ ). Second, midwives aged 50 and older were more likely to name protection from COVID-19 as an advantage than those aged 39 years and younger ( $p = 0.018$ ; see Table 4; Fig. 1).

A significant relationship was also found to exist between professional experience and the association of telemedicine with the advantages mentioned by respondents (chi-square (2) = 16.4,  $p < 0.001$ ,  $n = 523$ ), with a small to medium-sized effect according to Cohen (1988; Cramer's  $V = 0.177$ ). The less work experience the midwives had, the more often they tended to mention an advantage beyond the pandemic. Bonferroni-adjusted post-hoc tests showed that midwives with up to 14 years of professional experience were significantly more likely to indicate an advantage beyond the pandemic than their colleagues with 15 to 24 ( $p = 0.021$ ) and 25 years and more of professional experience ( $p < 0.001$ ), respectively (see Table 3).

Again, looking at the subcategories offers further insight. The chi-square test demonstrated that there is a significant association between professional experience and the advantages mentioned by respondents (chi-square (10) = 28.2,  $p = 0.002$ ,  $n = 523$ ), with a large effect according to Cohen (1988) (Cramer's  $V = 0.164$ ). A Bonferroni post-hoc comparison between the advantages stated revealed that midwives with up to 14 years of professional experience were significantly more likely to indicate reduced workload as an advantage than their colleagues with 15 to 24 ( $p < 0.001$ ) and 25 years and more of professional experience ( $p = 0.001$ ), respectively; and midwives with 15 to 24 years of professional experience were significantly more likely to mention improvement in health care as an advantage than professionals with more work experience ( $p = 0.036$ , see Table 4, Fig. 1).

To examine the relationship between work setting and the main categories, a chi-square test of independence was performed. The test results showed that there is no significant association between work setting and the mentioning, or the negation, of advantages (chi-square (1) = 0.2,  $p = 0.618$ ,  $n = 522$ , see Table 3). To find out whether this is also the case for the subcategories, a statistical analysis (by means of a two-sided Fisher-Freeman-Halton test) was performed, which confirmed that with midwives working solely in hospitals, the mention of "Protection against COVID-19" occurred more frequently than expected by chance ( $p = 0.038$ , see Table 4, Fig. 1).

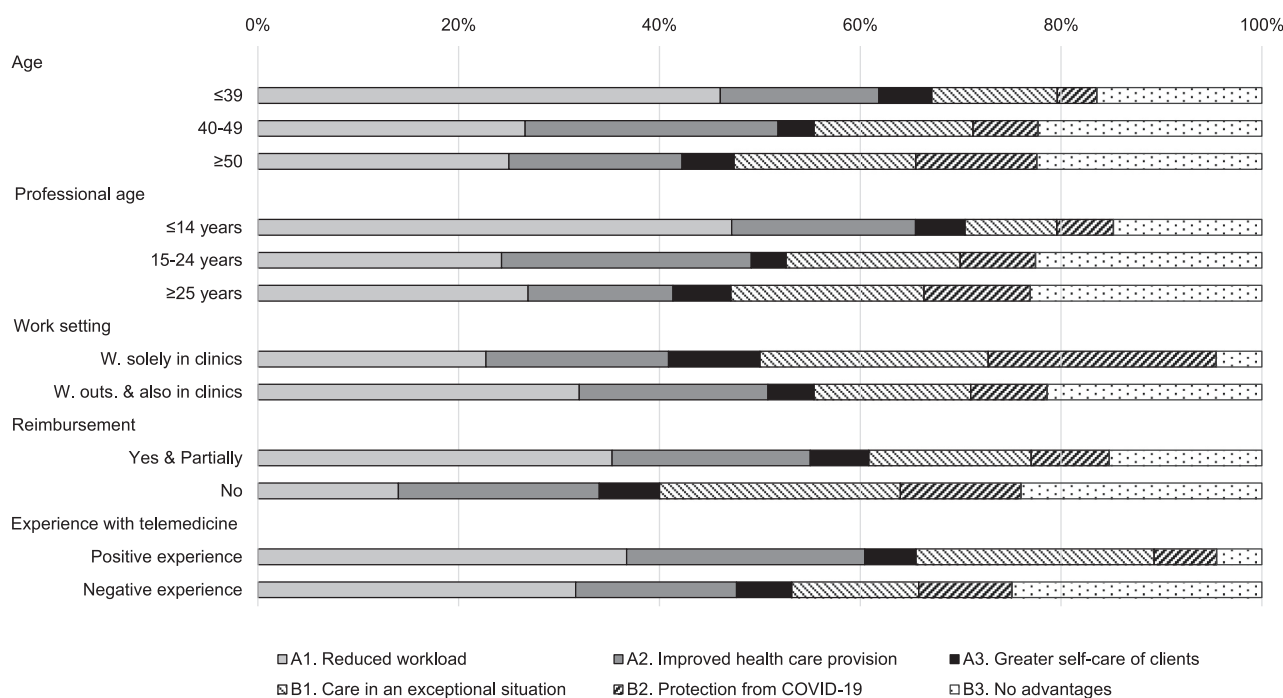
Furthermore, the association between reimbursement for telemedicine services and the main categories was examined. The chi-square test demonstrated that there is a significant association between reimbursement and the advantages mentioned by respondents (chi-square (1) = 7.6,  $p = 0.006$ ,  $n = 359$ ), with a small effect according to Cohen (1988; Cramer's  $V = 0.146$ ). Midwives who had been reimbursed for providing care at a distance were more likely to mention an advantage beyond the pandemic than those who had not (see Table 3). When considering the subcategories, a significant correlation was found (by means of a two-sided Fisher-Freeman-



**Table 3**  
Perceived advantages of health care at a distance, main categories.

		A. Advantages beyond the pandemic n = 289 (55.3%) n (%)	B. Pandemic-related advantages and no advantages n = 234 (44.7%) n (%)	p-value	n = 523 (100%)
Age					
39	A	C 102 (67.1)	50 (32.9)		
40-49	B	77 (55.4)	62 (44.6)		
≥50	C	110 (47.4)	A 122 (52.6)	0.001	523
Professional experience					
≤14 years	D	E F 108 (67.9)	51 (32.1)		
15-24 years	E	89 (53.3)	D 78 (46.7)		
≥25 years	F	92 (46.7)	D 105 (53.3)	<0.001	523
Work setting					
Working solely in hospitals	G	11 (50.0)	11 (50.0)		
Working solely in community settings & working in hospitals as well as community settings	H	277 (55.4)	223 (44.6)	0.618	522
Reimbursement					
Yes & Partially	K	L 188 (60.8)	121 (39.2)		
No	L	20 (40.0)	K 30 (60.0)	0.006	359
Experience of health care at a distance					
Positive experience	M	N 116 (65.5)	61 (34.5)		
Negative experience	N	126 (53.2)	M 111 (46.8)	0.011	414

Significance level for capital letters (A, B, C, D, E, F, G, H, K, L, M, N): .05



**Fig. 1.** Perceived advantages of health care at a distance.

Halton test) between reimbursement for telemedicine services and the cited advantages ( $p = 0.032$ ,  $n = 359$ ). Bonferroni post-hoc tests revealed that midwives who were reimbursed for providing care at a distance were more likely to cite the reduction in workload as a benefit compared to those who were not reimbursed ( $p = 0.003$ , see Table 4, Fig. 1).

Finally, a significant relationship was found between the quality of the experience (positive/negative) and the main categories (chi-square (1) = 6.4,  $p = 0.011$ ,  $n = 414$ ), with a small effect size according to Cohen

(1988; Cramer's  $V = 0.124$ ). Midwives whose experience of telehealth had been positive were more likely to mention an advantage beyond the pandemic than their colleagues whose experience had been negative (see Table 3). Turning to the subcategories, we observed that there was a significant correlation between experience with telemedicine and the advantages mentioned (chi-square (5) = 38.2,  $p < 0.001$ ,  $n = 414$ ). The effect size according to Cohen (1988; Cramer's  $V = 0.304$ ) is large. A Bonferroni-adjusted post-hoc comparison showed that midwives with a positive experience were more likely to mention the maintaining of

**Table 4**  
Perceived advantages of health care at a distance, subcategories.

		A1. Reduced workload n = 165 (31.5%) n (%)	A2. Improved health care provision n = 99 (18.9%) n (%)	A3. Greater self-care of clients n = 25 (4.8%) n (%)	B1. Care in an exceptional situation n = 83 (15.9%) n (%)	B2. Protection from COVID-19 n = 43 (8.2%) n (%)	B3. No advantages n = 108 (20.7%) n (%)	p-value	n = 523 (100%)
Age									
≤39	A	<b>B C</b> 70 (46.1)	24 (15.8)	8 (5.3)	19 (12.5)	6 (3.9)	25 (16.4)		
40-49	B	37 (26.6)	35 (25.2)	5 (3.6)	22 (15.8)	9 (6.5)	31 (22.3)		
≥50	C	58 (25.0)	40 (17.2)	12 (5.2)	42 (18.1)	<b>A</b> 28 (12.1)	52 (22.4)	0.001	523
Professional experience									
≤14 years	D	<b>E F</b> 71 (44.7)	30 (18.9)	7 (4.4)	18 (11.3)	8 (5.0)	25 (15.7)		
15-24 years	E	41 (24.6)	<b>F</b> 41 (24.6)	6 (4.2)	28 (16.8)	13 (7.8)	37 (22.2)		
≥25 years	F	53 (26.9)	28 (14.2)	12 (5.6)	37 (18.8)	22 (11.2)	46 (23.4)	0.002	523
Work setting									
Working solely in hospitals	G	5 (22.7)	4 (18.2)	2 (9.1)	5 (22.7)	<b>H</b> 5 (22.7)	1 (4.5)		
Working solely in community settings & working in hospitals as well as community settings	H	160 (32.0)	94 (18.8)	23 (4.6)	78 (15.6)	38 (7.6)	107 (21.4)	0.038	522
Reimbursement									
Yes & Partially	K	<b>L</b> 109 (35.3)	61 (19.7)	18 (5.8)	50 (16.2)	24 (7.8)	47 (15.2)		
No	L	7 (14.0)	10 (20.0)	3 (6.0)	12 (24.0)	6 (12.0)	12 (24.0)	0.032	359
Experience of health care at a distance									
Positive experience	M	65 (36.7)	<b>N</b> 42 (23.7)	9 (5.1)	<b>N</b> 42 (23.7)	11 (6.2)	8 (4.5)		
Negative experience	N	75 (31.6)	38 (16.0)	13 (5.5)	30 (12.7)	22 (9.3)	<b>M</b> 59 (24.9)	<0.001	414

Significance level for capital letters (A, B, C, D, E, F, G, H, K, L, M, N): .05

**Table 5**  
The questionnaire.

No.	Question	Response format
1	Please select your language preference	German/ French/ Italian
2	Age in years	[Number]
3	Gender	Female/ Male/ Other
4	Professional experience in years:	[Number]
5	The field of activity of my institution/organization focuses on:	Outpatient care (e.g., midwifery practice)/ Inpatient care (e.g., hospital, birth center)/ Home care
6	I am professionally active mainly in this canton:	[Selection of canton]
7	During the COVID-19 pandemic, did you perform necessary and/or urgent examinations, treatments (including consultations), and therapies at a physical distance?	Yes/ No
8	What medium did you use to perform necessary and/or urgent examinations, treatments (including consultations), and therapies at a physical distance? Phone, E-mail, Chat (e.g., WhatsApp, online chat), Short message service (e.g., SMS), Videoconference	Yes/ No Yes/ No Yes/ No
9	If you have used it, how appropriate do you consider the following media for examinations, treatments (including consultations), and therapies at a physical distance? Phone, E-mail, Chat, Short message service, Videoconference	Not at all appropriate/ Rather inappropriate/ Rather appropriate/ Very appropriate
10	How did you experience necessary and/or urgent examinations, treatments (including consultations), and therapies at a physical distance?	Negative/ Rather negative/ Rather positive/ Positive/ Do not know
11	What do you think: How did your clients experience the examinations, treatments (including consultations), and therapies at a physical distance?	Negative/ Rather negative/ Rather positive/ Positive/ Do not know
12	Were you able to invoice the examinations, treatments (including consultations), and therapies at a distance to the health insurance companies?	Yes/ No/ Partly/ Do not know
13	What do you perceive as the advantages and opportunities of examinations, treatments (including consultations), and therapies at a physical distance?	[Open text format]
14	What do you perceive as the disadvantages and limitations of examinations, treatments (including consultations), and therapies at a physical distance?	[Open text format]
15	What support would you like/would you have liked in carrying out urgent examinations, treatments (including consultations), and therapies at a physical distance?	Infrastructural knowledge/ Knowledge about applications (apps)/ Legal and data protection knowledge/ Knowledge about invoicing/ Knowledge of federal regulations/ Knowledge of client needs/ Knowledge of client requirements/ Knowledge about effectiveness/ Knowledge of communication methods/ Knowledge of the examination and treatment process/ Knowledge of appropriate methods/ Other knowledge (please specify)
16	If you were offered further training about examinations, treatments (including consultations), and therapies at a physical distance: What would be important topics for you?	Infrastructural knowledge/ Knowledge about applications (apps)/ Legal and data protection knowledge/ Knowledge about invoicing/ Knowledge of federal regulations/ Knowledge of client needs/ Knowledge of client requirements/ Knowledge about effectiveness/ Knowledge of communication methods/ Knowledge of the examination and treatment process/ Knowledge of appropriate methods/ Other knowledge (please specify)
17	This was the final question. Do you have any other comments on examinations, treatments (including consultations), and therapies at a physical distance?	[Open text format]

care ( $p = 0.003$ ) and improved health care provision ( $p = .050$ ) as an advantage than midwives who had had a negative experience, while midwives with a negative experience were more likely to see no advantage in providing telemedicine than their colleagues ( $p < 0.001$ , see Table 4, Fig. 1).

## Discussion

This study investigated the extent to which midwives associate telemedicine with advantages beyond the pandemic and explored how these advantages vary according to the midwives' age, years of professional experience, work setting, experience working with health care at a distance and reimbursement for it. It relies on a survey of midwives in Switzerland that reflects the gender distribution in the profession as well as the language distribution among members of the Swiss Federation of Midwives. To the best of our knowledge, this is the first study to investigate advantages of telemedicine during the COVID-19 pandemic according to the perceptions of midwives.

Our analysis shows that a good half of the respondents associated health care at a distance with an advantage beyond the pandemic, the rest with a pandemic-related advantage or no advantage at all. This suggests that a major portion of midwives saw in telemedicine a permanent component of health care provision. At the same time, there are meaningful differences between midwifery professionals in how the benefits of health care at a distance were perceived. Within the two main groups we identified, we were able to find a total of six different response motives ("Reduced workload", "Improved health care provision", "Greater self-care of clients", "Maintaining care/counseling in an exceptional situation", "Protection from COVID-19", and "No advantages"), representing a broad scope of topics.

Among the three advantages not related to the pandemic, "Reduced workload" (31.5%) featured most prominently. This points to the generally high workload of midwives (see Hunter et al., 2019). In particular, telemedicine was perceived as a way to reduce the, sometimes extensive, travel time (often perceived as unproductive) of midwives associated with home visits. This is based on the experience that, using telemedicine, some home visits (e.g., to care for multiparous women) can be carried out at a distance.

Two other advantages that go beyond the pandemic situation are primarily oriented towards the well-being of women: "Greater self-care of clients" (4.8%) and "Improved health care provision" (18.9%). While in the first case, telemedicine was seen as a means for clients to show more commitment, self-control, and self-care, in the second case telemedicine was considered as the medium to improve the quality of health care and to expand it further (e.g., accessibility of health care in remote areas).

Only two of the advantages mentioned were explicitly pandemic-related: "Protection from COVID-19" and "Maintaining care". While mention of these two factors might have been expected in light of the ongoing COVID-19 pandemic, they were only referred to by 24.1% of respondents. Based on the literature on pandemic situations (Billings et al., 2021), we had assumed that these categories would be more prevalent.

A not insignificant proportion of respondents (20.7%) was found to be averse to telemedicine ("No advantages"). In fact, the need for the physical presence of midwives was emphasised across the board, expressing a rather literal understanding of the notion of "presence" (Pembroke and Pembroke, 2008). Some even expressed a categorical aversion to treatment at a distance.

The consideration of sociodemographic and work-related characteristics revealed various age effects. Consistent with expectations, we were able to show that the age group of 50 and older is significantly overrepresented among those who saw the benefit of telemedicine in "protection from COVID-19." This response tendency is understandable considering that the risk of severe disease with COVID-19 increases with age. At the same time, the hypothesis was not confirmed that older midwives are more likely to perceive no advantage in telemedicine than younger ones.

In fact, no apparent differences between age groups were found in terms of whether the benefits of telemedicine were recognised or rejected.

The overrepresentation of midwives with 15 to 24 years of professional experience among those who saw the advantage of telemedicine in the improvement of health care is remarkable. This phenomenon might be explained by the fact that recognising this benefit requires, on the one hand, many years of work experience (which the younger age group usually does not have) and, on the other hand, a certain familiarity with telemedicine tools (which is much less common among older health professionals).

Furthermore, we found that midwives aged 39 and younger and midwives with up to 14 years of professional experience were considerably more likely to see a reduction in workload as an advantage of telemedicine. One reason for this could be the fact that for younger, more digitally savvy midwives the work of practising telemedicine might actually be less strenuous (Taipale, 2016). There might also be systematic differences in how midwives perceive their work at different stages of their life course (e.g., Geraghty et al., 2019; McDonald et al., 2016; Sullivan et al., 2011); Schmitz (1994) observed that working conditions tend to be an issue for younger midwives, while older workers identify more strongly with more traditional job descriptions. It also seems conceivable that the increased attention to workload among the youngest age group, consistent with the finding in the literature of younger health professionals' greater focus on working conditions and a healthy work-life balance (for nursing see: Jamieson et al., 2013), is related to changes in the profession and in professional socialisation (see Oliver, 2006).

Evidence that more fundamental differences are at stake here is also indicated by the findings on the associations between age and professional experience and whether respondents cited advantages beyond the pandemic or not. We were able to show that midwives of younger age and fewer years of professional experience were more likely to mention advantages beyond the pandemic compared to their older colleagues. This can be understood as an indication that telemedicine has a basic acceptance beyond the special current pandemic situation among noticeably more (professionally) younger midwives. However, further research is needed to truly understand this generational difference, which has also been noted elsewhere (e.g. Zinsser et al., 2016).

Regarding the work setting, we found that midwives working solely in hospitals were significantly more likely to mention "Protection from COVID-19" as an advantage of health care at a distance. However, contrary to our expectations, no connection could be found between work in a hospital and pandemic-related responses in general. This could be due to the fact that the other two subcategories ("Care in an exceptional situation" and "No advantages") are notably related less strongly to the medicalized and institutional world view prevailing in the hospital setting (Hunter, 2004) than "Protection from COVID-19", or that the three subcategories of advantages beyond the pandemic ("Reduced workload", "Improved health care provision", and "Greater self-care of clients") cannot be clearly distinguished from this ideology.

With regard to midwives' experiences while providing health care at a distance, our analysis showed that a large proportion experienced telemedicine as negative (59.3%). This echoes studies which have shown that midwives' professional experience in pandemics is generally less positive due to the multiple constraints and high burden on health in these public health crises (Gershon et al., 2016; Lamb, 2018; Liu and Liehr, 2009; Semaan et al., 2020; Smith et al., 2017). At the same time, our study adds to the literature by demonstrating that quite different perspectives may exist and that experiences must always be understood in the light of fundamental perceptions. Further research is necessary to acquire a sound understanding of underlying reasons, including the general attitudes involved.

In addition, we found that midwives were more likely to see advantages of telemedicine beyond the pandemic if they had had positive experiences and/or had been reimbursed for providing care at a distance.



The latter is likely to be related to the fact that being compensated involves not only a monetary reward for a service provided but is also always associated with some form of recognition, the effect of which goes far beyond the present and, in this case, is likely to promote a belief in the value of performing telemedicine work in the future. In this respect, the experiences of professionals during the pandemic may affect their future perceptions of health care at a distance.

This study has a number of limitations. The data were collected during the early phase of the COVID-19 pandemic. A survey conducted at a later stage of the pandemic might possibly reveal different attitudes towards telemedicine. On the other hand, this mainly affects the descriptive data. From the results of the statistical analyses, it appears that the relationships of the reported advantages, e.g., with age and work experience, are very much in line with the literature, even considering the exceptional situation at the beginning of the pandemic. Thus, there is evidence to suggest that these associations, which are the main focus of this article, would also be found in later stages of the pandemic.

The possibility of selection bias among our self-selected respondents cannot be excluded. It is possible that especially midwives with strong opinions on the topic of telemedicine participated in the survey and were motivated to complete the questionnaires within the time period of just 16 days. However, this limitation is deemed to be of minor importance since this research is precisely about differences in perception of advantages and these differences can also be observed among midwives with strong opinions on the subject.

Moreover, the p-value can vary in magnitude depending on the sample size and is only an indication of the probability that a result could not have been obtained by chance. The validity or plausibility of hypotheses should therefore also be tested by other means. Nevertheless, the p-value is still an indicator to distinguish between random effects and true effects. In addition, by including as much empirical and theoretical plausibility from the literature as possible, the limitations of the p-value can be counterbalanced. It is in this sense that we use the term “statistically significant”. That said, it remains for further research on the topic to judge the extent to which the plausibility established in this analysis is valid beyond the scope of this study.

## Conclusion

The present study showed that midwives in Switzerland associated six different motives with the advantages of health care at a distance, indicating a diversity of perceptions. This result expands the discussion about the perception of telemedicine, which is very often conducted from the perspective of acceptance (e.g., [Chau and Hu, 2002](#); [Ramírez-Correa et al., 2020](#)).

We demonstrated that the difference between advantages associated by midwives with beyond the pandemic advantages and pandemic-related (or no) advantages varies substantially with age and professional experience, as well as work-related characteristics. This is an indication that this divergence is meaningful, but it also shows that it is associated with other characteristics of midwives, especially age and professional experience. This finding ties in with the discussion about “digital natives” ([Prensky 2001a, 2001b](#)) and “digital “immigrants,”” ([Taipale, 2016](#)) but at the same time indicates that professionals tend to perceive telemedicine more from the perspective of the prevailing professional ideology as they gain experience ([Bourdieu 1998](#)).

If and to what extent other characteristics are significant needs to be investigated further. In addition, with regard to understanding the basic principles of perceptions concerning telemedicine, it seems important to investigate further aspects of this perception itself (e.g., associated disadvantages).

This research has implications for the practice of midwifery. It provides evidence to help us understand differences in the perceptions of health care at a distance and, thus, contributes towards improving the work situation of midwives and the health care they provide to women

and families. Our findings also offer new knowledge for the ongoing discussion about the future use of telemedicine in health care.

## Ethical approval

Not applicable.

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## Declaration of Competing Interest

None declared.

## CRediT authorship contribution statement

**Michael Gemperle:** Conceptualization, Methodology, Validation, Formal analysis, Data curation, Writing – original draft, Writing – review & editing, Visualization, Funding acquisition. **Susanne Grylka-Baeschlin:** Conceptualization, Software, Investigation, Writing – original draft, Writing – review & editing. **Verena Klamroth-Marganska:** Conceptualization, Investigation. **Thomas Ballmer:** Investigation. **Brigitte E. Gantschnig:** Conceptualization, Project administration, Funding acquisition. **Jessica Pehlke-Milde:** Conceptualization, Resources, Project administration, Funding acquisition.

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