Follow-up survey on international COVID-19 primary care pandemic response study: report

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PHC & Pandemic Response Study
key findings

In our previous study, we revealed a disconnect in the early phases of the pandemic between primary care strength at a national level and early mortality rates from COVID-19, but also widespread and shared perceptions of limited investment in, coordination with, and engagement of primary care in pandemic response. This follow up one year into pandemic confirms nearly 80% of respondents felt that primary care providers are insufficiently remunerated to provide remote access services, with even higher proportions in the AMRO region.

In general, countries where primary care has been integrally involved in vaccine delivery appear to have better vaccination rates, but this is also influenced by the availability of vaccine. Having a coordinated response between public health and primary care also appears to be an effective strategy.

The vast majority of respondents affirmed the need for greater integration of and coordination between public health and primary care. And on a personal level, 85% reported experiencing some degree of personal mental health difficulty over the preceding year.

More positively, respondents felt that the primary care sector had learned from the pandemic, and would be in a better position to respond to the next one. Specifically, they noted that primary care providers have acquired an increased capacity for using technology in delivering primary care services as a result of COVID-19.

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Background

Primary Health Care (PHC), integrating both public health and first-contact primary care, is the cornerstone for universal health coverage, and the foundation for any country's health emergency response. In late April to early May 2020, soon after the COVID-19 pandemic broke, we conducted an international survey looking at perceptions of primary care experts on the primary care system strength, pandemic preparedness and response, and how these related to COVID-19 death rates in their respective countries. This report highlights a follow up to the initial survey, conducted approximately one year later.

Analyses and a summary of the initial survey can be found here, a presentation about our findings here, and results published in several papers.[1-3] We received 1035 responses from 111 countries with between one and 163 respondents per country. All world regions and economic tiers were represented. We found no correlation of primary care strength with mortality. Country-level mortality was negatively correlated with perceived stringent border control, movement restriction and testing regimes.[2] It appeared insufficient for a country to have a prepared pandemic plan and strong primary care, and many other factors also contributed to spread of COVID-19 and the subsequent outcomes. We identified that important responses are to first limit COVID-19 entry across country borders, and then to mobilise the primary health care approach. Public health and primary care functions need to be integrated to mitigate the spread of the infection, and reduce burden on hospitals through hygiene, physical distancing, testing, triaging and contract-tracing measures.

The study also highlights the capricious nature of viral spread, even in the face of planning coordination and the importance of favourable geography (such as island nations) when transit and border management are essential. While the COVID-19 pandemic spread throughout the entire world, countries had very diverse responses with respect to the rapidity of their responses and their strategies. Some responded faster than others, with considerable variations in strategy. Countries lacking integration between primary care and essential public health functions showed a strong correlation with high early mortality rates.[1,3]

The nature of spread was capricious. Island nations often had more favourable outcomes, given their ability to restrict travel and border management more easily. Other key factors to emerge were having effective leadership to implement a plan, robust scientific advice, clear

communication, and appropriate plans for specific geopolitical contexts. There is an expectation that integrating primary care and public health is likely to lead to much improved health outcomes in a pandemic.[3]

Over the past year, unprecedented data sharing and universal collaboration particularly related to gene-sequencing has resulted in the development of several viable vaccines aimed at various circulating strains of the virus in the hope of protecting populations from severe and fatal health outcomes. At the time of this report (end of July 2021), just over a quarter of the world's population have received at least one dose, while this is only 1% of people in low-income countries.[4] Some countries continue to experience new waves of infections, especially with the more virulent Delta variant now circulating. This variant arose in India in April 2021, led to a new wave of infection in the United Kingdom (UK), and is now causing COVID-19 resurgence in many other parts of the world. It appears to be about 60% more transmittable than the highly infectious Alpha variant that circulated in the UK in late 2020, and is moderately resistant to vaccines, especially in those who have only received one dose.[5]

Aim and objectives

As follow-up to our initial survey, we conducted a brief survey a year into the pandemic, aiming again to gather primary care perspectives on the government response to an ongoing pandemic, and any evolution in the involvement and role of primary health care across countries.

In particular, we asked primary health care leaders and experts in each country:

1. To identify the role of primary care in the distribution/administration of COVID-19 vaccines.
2. To give their opinion on whether their national government's response to the pandemic now focused primarily on the potential medical, economic or political impact.
3. To indicate whether or not their country's:
    - primary care sector is now better prepared for a future pandemic
    - primary care providers have increased capacity for using technology in delivering patient care

- primary care providers are sufficiently renumerated to provide remote access services.

4. To indicate what improvements in their opinion are now needed in primary care regarding:
    - Equitable and adequate supply of essential resources such as personal protective equipment
    - Support (such as financing, resourcing, training) to deliver services remotely
    - Better integration between the public and private sectors
    - Better integration between public health and primary care
    - Better integration between primary and secondary care
    - Extended scope of practice of members of the primary care team
    - Clear government direction regarding the role of primary care
    - Greater involvement in testing, triaging, and surveillance
    - Greater involvement in the population vaccination programme
    - Assistance with addressing the increase in non-COVID-19 conditions exacerbated or where management has been delayed due to the pandemic
    - Other things that might be unique to their country.
5. To indicate whether and to what degree their personal mental health has suffered as a result of working in primary care during COVID-19.

Methods

Study design

We used the same mixed method online study design, with open-text options to supplement quantitative responses.

Ethical approval

An amendment was obtained to conduct the follow-up survey from the original ethics approval granted for three years on 9 Apr 2020 by the University of Auckland Human Participants Ethics Committee (UAHPEC), Ref number 024557.

Sampling

Initially we targeted respondents from our first survey who had indicated interest in future work (aspect of temporality) but then, based on response rate, this follow-up survey was more broadly distributed using a snowballing sampling framework similar to what was conducted in our initial survey..

Respondents were primary health care experts (clinicians, researchers and policy-makers) targeting all countries in the world. Because this was a convenience sample obtained through survey dissemination by the researchers' collective primary health care networks, and respondents were encouraged to share the survey, no denominator is available to enable calculation of a response rate.

Survey

Data were collected through an anonymous online survey administered via Qualtrics[6] (see Appendix A for the survey questions). The survey was developed collectively by the researchers and translated into Spanish.

Analyses

Simple descriptive statistical analyses were conducted on quantitative data using Stata v15).

Results

Description of participants

There were 192 responses from 62 countries, 171 in English and 21 in Spanish. One hundred and seventeen (62%) respondents identified themselves as primarily primary care clinicians, 61 (33%) as primary care academics, and 10 (5%) as primary care policy-makers. Only 16 countries had five or more respondents. Figure 1 and Table 1 reveal the distribution per country.

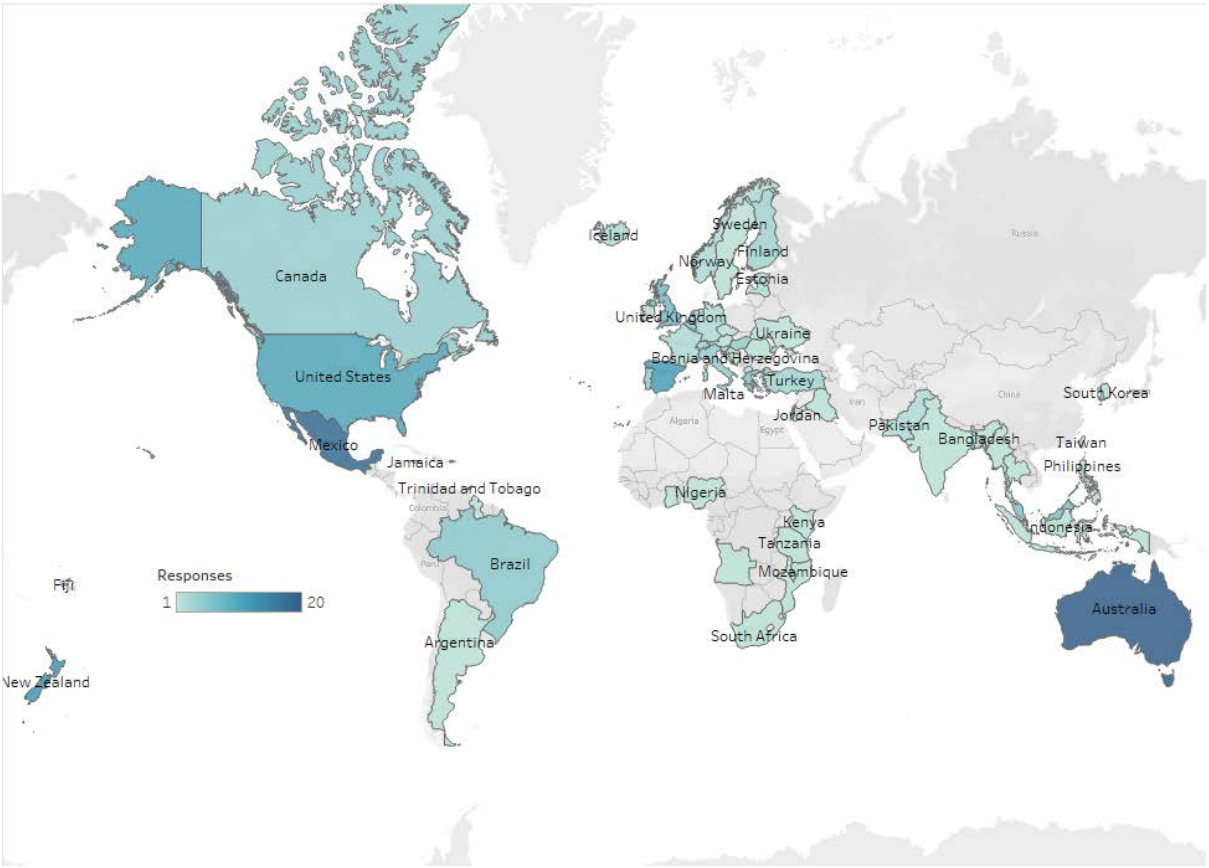

Figure 1 Distribution of responses per country

There was also a large variation in numbers when grouped by WHO region, with only eight in AFRO (each from a different country) and four in EMRO (Table 1). The other three regions were better represented: AMRO (n=45), EURO (n=82) and WPRO (n=46).

Table 1 Number of responses by country organised by WHO regional group

Country	WHO region	n	%
Angola	AFRO	1	0.52
Ghana	AFRO	1	0.52

Kenya	AFRO	1	0.52
Malawi	AFRO	1	0.52
Mozambique	AFRO	1	0.52
Nigeria	AFRO	1	0.52
South Africa	AFRO	1	0.52
Tanzania	AFRO	1	0.52
Region total	***AFRO***	***8***	
Mexico	AMRO	18	9.38
United States	AMRO	10	5.21
Brazil	AMRO	5	2.6
Trinidad and Tobago	AMRO	5	2.6
Canada	AMRO	4	2.08
Argentina	AMRO	1	0.52
Guyana	AMRO	1	0.52
Jamaica	AMRO	1	0.52
Region total	***AMRO***	***45***	
Pakistan	EMRO	2	1.04
Iraq	EMRO	1	0.52
Jordan	EMRO	1	0.52
Region total	***EMRO***	***4***	
Spain	EURO	11	5.73
United Kingdom	EURO	7	3.65
Greece	EURO	6	3.13
Israel	EURO	6	3.13
Belgium	EURO	4	2.08
Hungary	EURO	4	2.08
Italy	EURO	4	2.08
Portugal	EURO	4	2.08
Finland	EURO	3	1.56
Netherlands	EURO	3	1.56
Switzerland	EURO	3	1.56
Turkey	EURO	3	1.56
Croatia	EURO	2	1.04

Estonia	EURO	2	1.04
France	EURO	2	1.04
Germany	EURO	2	1.04
Iceland	EURO	2	1.04
Latvia	EURO	2	1.04
Norway	EURO	2	1.04
Austria	EURO	1	0.52
Bosnia and Herzegovina	EURO	1	0.52
Czech Republic	EURO	1	0.52
Ireland	EURO	1	0.52
Macedonia	EURO	1	0.52
Malta	EURO	1	0.52
Romania	EURO	1	0.52
Slovenia	EURO	1	0.52
Sweden	EURO	1	0.52
Ukraine	EURO	1	0.52
Region total	***EURO***	***82***	
Bangladesh	SEARO	3	1.56
India	SEARO	1	0.52
Indonesia	SEARO	1	0.52
Myanmar	SEARO	1	0.52
Thailand	SEARO	1	0.52
Region total	***SEARO***	***7***	
Australia	WPRO	20	10.42
New Zealand	WPRO	12	6.25
Malaysia	WPRO	6	3.13
Hong Kong	WPRO	4	2.08
Fiji	WPRO	1	0.52
Philippines	WPRO	1	0.52
South Korea	WPRO	1	0.52
Taiwan	WPRO	1	0.52
Region total	***WPRO***	***46***	

KEY: AFRO = African region; AMRO = Region of the Americas; EURO = European region; EMRO = Eastern Mediterranean region; SEARO = South East Asian region; WPRO = Western Paciifc region.

Vaccine distribution & primary care

Respondents were asked how they characterise the current role of primary care in the distribution or administration of COVID-19 vaccine in their country. Forty-six percent of respondents said primary care played a central role in vaccine distribution in 46% of respondents, and some role in 82% (Table 2).

Table 2: Role of primary care in the distribution or administration of COVID-19 vaccines

	AFRO		AMRO		EMRO		EURO		SEARO		WPRO		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Central to distribution / administration of vaccines	4	50	20	44.4	2	50	11	23.9	50	61	2	28.6	89	46.4
Involved but not in a central role	3	37.5	12	26.7	1	25	20	43.5	28	34.1	4	57.1	68	35.4
Little or no involvement	0	0	13	28.9	1	25	12	26.1	4	4.9	1	14.3	31	16.1
We don't have vaccines yet	1	12.5	0	0	0	0	3	6.5	0	0	0	0	4	2.1

In Portugal, where '*primary care is the one who is doing all the administration'*, 67% are fully or partially vaccinated relative to the population as of 25th July 2021,[4] and in Finland (66% vaccinated) '*primary care is totally responsible for vaccinations*'. In Israel (67%), which vaccinated early, *'a universal healthcare system with assignment of a primary care provider to every person… was key to the success*'. See Table 3 for fully vaccinated rates per country as per end July 2021.[4] From Mexico, with 34% partally or fully vaccinated (translated from Spanish) '*vaccines are handled by the federal government, it did not take into account primary health care, nor the General Health Council, nor the existing public health infrastructure. … Capitalizing on vaccination at the federal level was with political benefits for the political party currently in power*.'

However in Pakistan there is government control of the programme with *'little or none involvement of primary care physicians'* and only 3% are reported vaccinated. In Hong Kong, where a central approach was used *'bypassing primary care doctors'*, a higher 40% are

vaccinated. In New Zealand, where vaccine rollout is slow (19%) *'area of frustration as general practice is set up and prepared to deliver the Covid 19 vaccination programme. They have the experience and the expertise to roll this out efficiently and effectively but the DHBs are being protectionist and controlling, are using any number of excuses to not involve them'*.

In the UK, where 69% of people have been vaccinated, there is a *'team effort between large vaccination centres and GP practices*'. One UK respondent writes that general practice has '*delivered around 90% of vaccinations in the roll out which has largely been regarded as one of the most successful roll outs globally'*. In Spain, where *'primary care is at charge of vaccinating the majority of patients,'* there is a 65% vaccination rate.

In some countries, primary care was not involved in the initial vaccination response but contributed to a second phase: *'in the big rollout phase a large number of GP practices and pharmacies can do the vaccinations'* (Switzerland – 53% now vaccinated) and '*early on there was no involvement of primary care physicians -this has changed in the last few month and we are doing more'* (Uruguay 73% vaccinated).

Primary care may be used to target specific groups. In Latvia (40%)'*Central role in motivating and/or vaccinating doubters, seniors and patients with chronic conditions…but not young and mobile pro-vaxers'*; in Ireland (64%) *'primary care has administered especially to high risk groups including older people and people with medical complexity'* and in Hungary (58%) *'vaccination centers are vaccinating the target population: health workers, teachers, social workers, and providers, etc. GPs are vaccinating the general population'*. In Italy (62%) *'we are involved in vaccine for teachers and school professionals and for specific age group target''* and in Belgium (68%) *'GPs give vaccination to those patients who are bed or homebound and indicate the patients at risk because of comorbidities or pregnancy who can apply for an earlier vaccination'*.

In some countries primary care staff are doing the vaccinations but succonded to dedicated delivery centres '*Vaccines are administered only thru the govt in Health Centres manned by primary care physicians*' (Trinidad and Tobago – 40%)

In a number of countries, primary care inolvment in vaccine delivery is largely limited by vaccine availability: '*not enough vaccinations delivered to participating GP clinics'*

(Australia – 31%); and *'I can not apply as many vaccines as my patients require, but only the number that I get every week'* (Croatia – 40%). In Australia *'we are giving the Astra Zenica vaccine but not Pfizer'*. In Bangadesh with only 4% vaccinated , one respondent writes 'there is a huge shortage of vaccines and the shots are now suspended'.

Table 3 Full vaccination rates for countries in the study[4]

Country[γ]	**Fully vaccinated***
Malta	84%
Iceland	74%
Uruquay	61%
Israel	61%
Hungary	56%
Canada	56%
United Kingdom	55%
Spain	54%
Belgium	54%
Ireland	52%
Portugal	51%
United States	49%
Germany	49%
Netherlands	48%
Italy	48%
Austria	48%
Greece	47%
Switzerland	46%
France	44%
Czech Republic	43%
Sweden	39%
Slovenia	38%
Estonia	36%
Latvia	35%
Croatia	34%
Norway	32%
Finland	32%

Hong Kong	30%
Turkey	26%
Romania	25%
Jordan	20%
Mexico	19%
Brazil	18%
Malaysia	17%
Guyana	17%
Trinidad and Tobago	13%
South Korea	13%
New Zealand	13%
Australia	13%
Argentina	13%
Fiji	9%
Indonesia	7%
India	7%
Philippines	6%
Thailand	5%
Bosnia and Herzegovina	5%
Ukraine	4%
South Africa	4%
Jamaica	4%
Pakistan	3%
Bangladesh	3%
Angola	2%
Taiwan	1%
Nigeria	1%
Mozambique	1%
Kenya	1%
Iraq	1%
Ghana	1%
Malawi	0.2%

[٧] Macedonia, Myanmar, Tanzania unknown
*Rounded to full percentage, relative to population.

Government response to pandemic

Respondents were asked whether they thought that their national government's response to the pandemic was now focused primarily on the medical, economic or political impact (Table 4).

Table 4: Government's pandemic response focused primarily on the potential medical, economic, or political impact

	AFRO		AMRO		EMRO		EURO		SEARO		WPRO		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Medical impact	6	75	15	33.3	3	75	27	32.9	1	14.3	19	41.3	71	37
Economic impact	1	12.5	18	40	1	25	28	34.1	4	57.1	14	30.4	66	34.4
Political impact	1	12.5	12	26.7	0	0	27	32.9	2	28.6	13	28.3	55	28.6

In stark contrast to the initial survey, where 70% of respondents who answered this question selected medical impact as the primary focus, only 37% of respondents selected 'medical' in the follow-up survey (Figure 2). While one may have expected economic considerations to take centre stage during this phase of the pandemic, it is interesting to observe that the shift from 'medical' to 'economic' and 'medical' to 'political' are similar in magnitude.

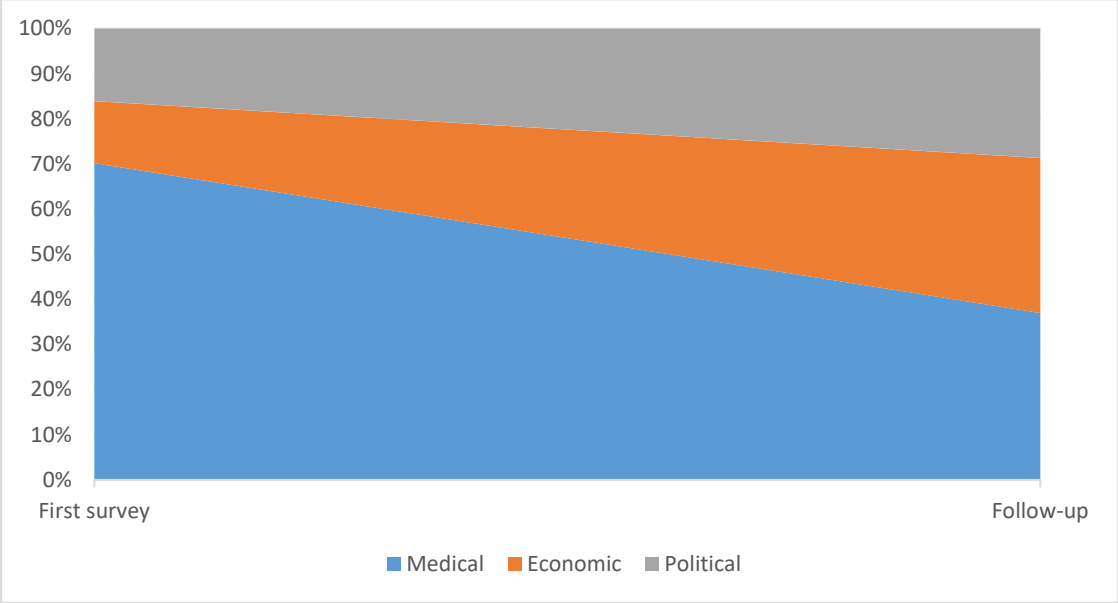

Figure 2 Comparing government response to pandemic in the two surveys

Coordination between public health agencies and the primary care team

The survey asked whether coordination between public health agencies and the primary care team had changed over the past year (Table 5). Nearly half (46%) of respondents said this coordination is much better (5%) or better (41%). This trend is seen across all the regions.

Table 5: Change in coordination between public health agencies and the primary care team in the past year

	AFRO		AMRO		EMRO		EURO		SEARO		WPRO		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Much worse	0	0	2	4.4	0	0	3	3.7	0	0	2	4.3	7	3.6
Worse	2	25	6	13.3	0	0	6	7.3	2	28.6	9	19.6	25	13
Same	1	12.5	15	33.3	2	50	38	46.3	3	42.9	12	26.1	71	37
Better	2	25	19	42.2	2	50	33	40.2	2	28.6	21	45.7	79	41.1
Much better	3	37.5	3	6.7	0	0	2	2.4	0	0	2	4.3	10	5.2

A respondent for Norway reports *'dialogue between the local level and regional/national authorities is better and more structured now than one year ago'*. However in New Zealand there is frustration about a disconnect between public health and primary care with '*little communication about how the vaccine rollout is managed'* and in Australia concern about*'lack of notification about vaccine rollout'*. A Spanish respondent reports '*in Madrid there is no direct contact between public health and health centers, beyond issuing recommendations'*.

In general, opinion is that more integration is needed: *'public private co- ordination needs more improvement'* (Malaysia) and '*role of primary care is recognised but still the commincation is not optimal'* (Czech Republic).

Primary care sector preparedness for a future pandemic

A majority (58%) of respondents either agreed or strongly agreed with the statement that the primary care sector in their country will be better prepared for a future pandemic (Table 6), although only 11% 'strongly agreed', possibly suggesting uncertainty/lack of confidence. About a quarter (24%) disagreed or strongly disagreed with the statement. Among the well-represented regions, a relatively bigger proportion of respondents from AMRO and EURO selected disagreed or strongly disagreed compared to WPRO.

Table 6: Primary care sector preparedness for a future pandemic

	AFRO		AMRO		EMRO		EURO		SEARO		WPRO		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Strongly disagree	0	0	4	8.9	0	0	3	3.7	3	42.9	2	4.3	12	6.3
Disagree	2	25	8	17.8	1	25	17	20.7	2	28.6	5	10.9	35	18.2
Neither agree or disagree	1	12.5	7	15.6	1	25	17	20.7	2	28.6	6	13	34	17.7
Agree	2	25	23	51.1	2	50	38	46.3	0	0	24	52.2	89	46.4
Srongly agree	3	37.5	3	6.7	0	0	7	8.5	0	0	9	19.6	22	11.5

Increased capacity for using technology

A large majority (73%) either agreed (53.13%) or strongly agreed (20.31%) that primary care providers have increased capacity for using technology in delivering primary care services as a result of COVID-19 (Table 7). Eighteeen percent either disagreed or strongly disagreed. Among the well represented regions, a relatively bigger proportion of respondents from AMRO and EURO selected disagreed or strongly disagreed compared to WPRO.

Table 7: Increased capacity for using technology in delivering primary care services

	AFRO		AMRO		EMRO		EURO		SEARO		WPRO		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Strongly disagree	1	12.5	0	0	0	0	2	2.4	2	28.6	1	2.2	6	3.1
Disagree	3	37.5	9	20	1	25	13	15.9	1	14.3	1	2.2	28	14.6
Neither agree or disagree	0	0	3	6.7	0	0	8	9.8	1	14.3	5	10.9	17	8.9
Agree	2	25	23	51.1	3	75	44	53.7	3	42.9	27	58.7	102	53.1
Strongly agree	2	25	10	22.2	0	0	15	18.3	0	0	12	26.1	39	20.3

Remuneration to provide remote access

When asked whether primary care providers are sufficiently remunerated to provide remote access services, only 21% of respondents agreed (17%) or strongly agreed (4%) – see Table

8. There were regional differences among the well-represented regions with 28% of EURO countries indicating adequate remuneration, compared with 18% of the western pacific region and 13% in the Americas.

Table 8: Primary care providers are sufficiently remunerated to provide remote access services

	AFRO		AMRO		EMRO		EURO		SEARO		WPRO		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Strongly disagree	2	25	15	33.3	0	0	19	23.5	2	28.6	5	11.1	43	22.6
Disagree	3	37.5	16	35.6	2	50	20	24.7	4	57.1	19	42.2	64	33.7
Neither agree or disagree	0	0	8	17.8	2	50	19	23.5	1	14.3	13	28.9	43	22.6
Agree	2	25	6	13.3	0	0	19	23.5	0	0	6	13.3	33	17.4
Strongly agree	1	12.5	0	0	0	0	4	4.9	0	0	2	4.4	7	3.7

In Belgium *'A teleconsultation by telephone or videoconference is remunerated at 20 €, fully and directly paid to the care provider by health insurance, while a "normal" consultation is remunerated at 27 €*' and in Israel *'a lot of the patient care is now done by phone or video, and we get time for these phone calls to be done'*. An Australian respondent reports*'the govt is actively reducing funding for telehealth*' and in Canada there is a fear that *'funders are going to back track and no longer allow physicians to bill for telehealth work*'. In New Zealand, where patients pay a considerable co-payment, *'patients generally do not like paying the same consultation fee for a phone/video consult as they do for a face to face consult'*.

A numbe of middle and low income countrire report lack of resources and funding for reehelth options. A Pakistani respondent writes *'Govt is not focused on primary care and has not improved in this case*' and from Myanmar '*primary care provider development … hindered by the current political crisis*'. From Mexico for general priamry care services *'the basic technology to provide remote care is lacking. The salaries of health personnel are fixed and do not vary according to the activities performed*'. Another from Mexico explains manageemnt of COVID-19 posiitve patients: '*in the institution in which I work, telephone*

follow-up was implemented for those people who were treated in the primary health care units and were diagnosed with mild COVID-19; prescribing them confinement in their home. These patients have been making phone calls to know their state of health once a day, guide them on alarm data and the most appropriate time to go to the emergency room'.

Improvements needed in primary care

Respondents were asked to indicate what improvements are now needed in priamry care delivery in their country, with multiple responses possible per respondent (Table 9).

The vast majority of respondents from all regions (72%) indicated the need for more support (such as financing, resourcing, training) to deliver services remotely. Sixty-six percent of all respondetns also indicated the need for clear government direction regarding the role of primary care, but this was relatively low for Western Pacific (54%) compared to EURO (70%) and the Americas (72%).

The need for better integration between public health and primary care was selected by 70% of respondents, whereas only 54% selected better integration between primary and secondary care, and 45% better integration between the public and private sectors. Among the well-represented regions, this response was relatively low for Europe (34%).

Overall, 39% saw the need for extended scope of practice of members of the primary care team, but this was relatively low for the Western pacific region (30%) compared with Europe (44%).

A majority of respondents from all regions except Europe indicated the need for an equitable and adequate supply of essential resources such as personal protective equipment. Overall, 38% of respondents selected the need for greater involvement in testing, triaging, and surveillance, but this was particularly in the Americas (60%), compared to Europe (28%) and Western Pacific (28%).

Overall, 39% of respondents selected that primary care should have greater involvement in the population vaccination programme, but this was very low for Europe (16%), compared with the Americas 56%) and Western pacific region (61%).

A majority of respondents from all regions (62%) indicated the need for assistance to address the increase in non-COVID-19 conditions exacerbated or where management has been delayed due to the pandemic.

Table 9: Improvements now needed in primary care

	AFRO		AMRO		EMRO		EURO		SEARO		WPRO		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Support (such as financing, resourcing, training) to deliver services remotely	6	75	36	80	3	75	59	72	7	100	28	60.9	139	72.4
Clear government direction regarding the role of primary care	5	62.5	32	71.1	3	75	57	69.5	4	57.1	25	54.3	126	65.6
Better integration between public health and primary care	3	37.5	38	84.4	4	100	54	65.9	4	57.1	32	69.6	135	70.3
Assistance with addressing the increase in non-COVID-19 conditions exacerbated or where management has been delayed due to the pandemic	5	62.5	30	66.7	3	75	51	62.2	6	85.7	24	52.2	119	62
Better integration between primary and secondary care	2	25	23	51.1	2	50	49	59.8	4	57.1	23	50	103	53.6
Extended scope of practice of members of the primary care team	1	12.5	16	35.6	4	100	36	43.9	4	57.1	14	30.4	75	39.1
Better integration between the public and private sectors	2	25	25	55.6	2	50	28	34.1	6	85.7	23	50	86	44.8
Greater involvement in testing, triaging, and surveillance	2	25	27	60	3	75	23	28	4	57.1	13	28.3	72	37.5
Equitable and adequate supply of essential resources such as personal protective equipment	5	62.5	32	71.1	4	100	20	24.4	4	57.1	24	52.2	89	46.4
Greater involvement in the population vaccination programme	0	0	25	55.6	4	100	13	15.9	5	71.4	28	60.9	75	39.1

When asked for further comments, there was a call for improved services for people with long-COVID and longer consultation to deal with multimorbidity from the UK, for increased funding generally for primary care in New Zealand, better collaboration and coordination of public and private primary care in Thailand, for primary care to be involved in decision-making on issues that impact their patients in the United States, for primary care to be '*valued, with increased funding and improved network integration with other levels of care*' in Brazil, and an increased priamry care workforce inGreece and in Malawi

On a reflective note, in Iceland, a respondent reported that '*Everything has went well in my country. The only problem is that increasing electronic communication threatens the personal interrelationship'*.

Mental health question

Our initial survey responses illuminated the stress, uncertainty, anxiety, and mental health toll the pandemic was taking on the primary care workforce during the first months of the pandemic. In our follow-up survey, we asked our respondents how often their personal mental health has suffered as a result of working in primary care during COVID-19 (Table 10). Only 16% responded never. There were regional differences among the well-represented regions, with 11% of respondents in the Americas, 14% in Europe and 22% in Western Pacific indicating no negative sequelae on their own mental health.

For some the impact was far greater, with 15% experiencing personal mental health difficulties either a few times a week (6%) or daily (10%). Sixty-nine of respondents experienced personal mental health difficulties between a few times a year or once a week.

Table 10 Personal mental health has suffered as a result of working in primary care during COVID-19

	AFRO		AMRO		EMRO		EURO		SEARO		WPRO		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	4	50	5	11.1	0	0	11	13.8	0	0	10	22.2	30	15.9
A few times a year or less	1	12.5	14	31.1	0	0	19	23.8	3	42.9	18	40	55	29.1
Once a month or less	1	12.5	6	13.3	2	50	13	16.3	0	0	3	6.7	25	13.2

A few times a month	1	12.5	10	22.2	1	25	22	27.5	2	28.6	7	15.6	43	22.8
Once a week	1	12.5	1	2.2	0	0	2	2.5	0	0	3	6.7	7	3.7
A few times a week	0	0	4	8.9	0	0	5	6.3	0	0	2	4.4	11	5.8
Every day	0	0	5	11.1	1	25	8	10	2	28.6	2	4.4	18	9.5

For those reporting issues, the problems and solutions were variable. and another *'increased stress, poor sleep.'* From Italy one reports *'PTSD, insonnia, binge, anxiety, uticaria, depressed, worse than during the emergency. I'm going to psychologist each week and pay from my pocket'* . From another from Croatia it has been *'a terrible burden juggling increased hours of work, family responsibilities, child care, personal health, aging parents, workplace dynamics deteriorating due to stressors'*.

Most have been able to cope with self care. An Australian clinician reported *'anxiety, burnout and frustration. Did not seek external help but did concentrate more on self care activities, to good effect';* from Solvenia *'issues with anxiety, and partly with moral injury. Most helpful were discussion with colleagues and good relationships with everybody in the clinic. Also helpful was physical activity (running). I had not (yet) required help from my doctor'*; from Greece *'burnout and anxiety. not to an extent that would require professional assistance';* from Switzerland *'I felt mainly depressed and had less joy to work. … The social interaction with my team have been missing…. I didn't feel unwell enough to look for medical help* and from France *'I have had more anxiety and often felt sad. I am lucky to have a healthy balance between professional and personal life'*. From Mexico (translation from Spanish): *'I suffered from episodes of anxiety and exhaustion. Did not ask for help, try as much as possible to improve myself'*.

There is fear about COVID-19 infection itself: *'concerns about infection among the elderly inside our own family'* (Thailand); *'the fear of contracting this novel disease while working on the frontlines has not subsided'* (Jamaica). From Latvia: *'anxiety has decreased after all the GP team and family members have been vaccinated'*. A primary ccare policy-maker from Banglaedesh reports *'I myself sufferer two time with COVID infection. 1st time it was almost symptomless but second time with moderate symptoms with respiratory complication. It is already 6 months of my second infection*'.

The severity of issues dealt with are very variable between countries. A primary care clinician in Pakistan reports that it has been *'scary to see covid all around and with the limitation that we did not had much resources to fulfill needs and provide care for so many who were dying in search of hospital and at home'* whereas from Australia *'I have a background level of anxiety, exacerbated by a shortage of holidays*'.

Discussion

In our previous study, we revealed a disconnect in the early phases of the pandemic between primary care strength at a national level and early mortality rates from COVID-19, but also widespread and shared perceptions of limited investment in, coordination with, and engagement of primary care in pandemic response.

In general, countries where primary care has been integrally involved in the pandemic response and the vaccine delivery appear to have better vaccination rates, but this is also influenced by the availability of vaccine. Having a coordinated response between publichealth and primary care also appears to be an effective strategy.

This follow-up assessment one year into the pandemic confirms that nearly 80% of respondents continue to feel that primary care providers are insufficiently remunerated to provide remote access services, with even higher proportions in the Americas region. Respondents affirmed the need for greater integration of and coordination between public health and primary care. On a personal level, 85% reported experiencing some degree of personal mental health difficulty over the preceding year.

Respondents felt that the primary care sector had learned from pandemic, and would be in a better position to respond to the next one. Specifically, they noted that primary care providers have acquired an increased capacity for using technology in delivering primary care services as a result of COVID-19.

Limitations

This was a convenience sample hence there is no denominator available to enable calculation of a response rate. Furthermore there is wide variation in the numbe of respondents per country, as well as the overall number of countries represented in each region, which limits

possibilities for in-depth statistical analyses. It is particularly that the Western Pacific region has a large number of respondents from Australia and New Zealand, and these high income countries are unlikely to be representative of some of the low- and middle-income countries in this region. Further, while responses from individual respondents are illustrative, they clearly do not represent their country.

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Appendix 1 PHC COVID-19 Follow-up survey questions

1. Since vaccines became available, how would you characterise the current role of primary care in the distribution/administration of COVID-19 vaccines in your country?

☐ Central to distribution / administration of COVID-19 vaccines ☐ Involved but not in a central role ☐ Little or no involvement ☐ We don't have vaccines yet

Any comments welcomed

2. In your opinion, is your national government's response to the pandemic now focused primarily on the potential… (check 1)

☐ Medical impact
☐ Economic impact
☐ Political impact

3.Compared with one year ago, coordination between public health agencies and the primary care team is currently:

☐ Much Worse -☐ Worse ----☐ Same --☐ Better ☐ Much better

Any comments welcomed, including how this coordination could be improved, or good examples of how coordination was effective (or implemented)

4. As a result of the COVID-19 pandemic to date, in my country…

our primary care sector will be better prepared for a future pandemic

☐ Strongly disagree ☐ Agree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly agree

primary care providers have increased capacity for using technology in delivering patient care

☐ Strongly disagree ☐ Agree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly agree

primary care providers are sufficiently renumerated to provide remote access services

☐ Strongly disagree ☐ Agree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly agree

Any comments welcomed

5 In your opinion, what improvements are now needed in primary care in your country? (please tick as many as apply)

☐ Equitable and adequate supply of essential resources such as personal protective equipment

☐ Support (such as financing, resourcing, training) to deliver services remotely

☐ Better integration between the public and private sectors

☐ Better integration between public health and primary care

☐ Better integration between primary and secondary care

☐ Extended scope of practice of members of the primary care team

☐ Clear government direction regarding the role of primary care

☐ Greater involvement in testing, triaging, and surveillance

☐ Greater involvement in the population vaccination programme

☐ Assistance with addressing the increase in non-COVID-19 conditions exacerbated or where management has been delayed due to the pandemic

☐ Other things that might be unique to your country (specify) _____

Please expand on your answer about how you think primary care in your country might be improved

6 Our initial survey responses illuminated the stress, uncertainty, anxiety, and mental health toll the pandemic was taking on the primary care workforce during the first months of the pandemic. Over the last year, how often has your personal mental health suffered as a result of working in primary care during COVID-19?

☐ Never

☐ A few times a year or less

☐ Once a month or less

☐ A few times a month

☐ Once a week
☐ A few times a week
☐ Every day

If you feel comfortable, please comment on your mental health experiences during this time (including issues with anxiety, burnout, moral injury, or post-traumatic stress syndrome) and whether/how you sought help or treatment.

Which country is reflected in your responses?

▼ Afghanistan (1) ... Zimbabwe (580)

Optional
If you have moved countries in the past 12 months, what was your country during the first survey?

▼ Afghanistan (1) ... Zimbabwe (580)

Are you primarily a
☐ Primary care clinician?
☐ Primary care academic?
☐ Primary care policymaker?
(check 1)