



INTERNAL DISPLACEMENT'S IMPACTS ON HEALTH IN YEMEN

ACKNOWLEDGEMENTS

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Cover Image: Children fetching clean water at a water distribution point supported by UNICEF in Al-Dhalie governorate, Yemen. © UNICEF/UN0372135/Alzekri, January 2020.

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*A young child is measured while being screened for severe acute malnutrition at Arhab Health Centre in Sana'a governorate, Yemen.
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INTRODUCTION

Yemen's long-standing humanitarian crisis deepened further in 2020, as ongoing conflict, some of the worst flooding in years and the Covid-19 pandemic combined to trigger new displacement and heighten the vulnerabilities of those affected. Conflict and violence triggered 89,000 new displacements in the first half of the year, and disasters 66,000.¹ More than 3.6 million people were internally displaced by conflict and violence as of 31 December 2020 and 223,000 people as a result of disasters.²

Internal displacement not only affects people's security, livelihoods and housing conditions, but also their health. The war raging since March 2015 has caused what has been called the worst humanitarian crisis in recent history.³ More than half of the country's health facilities have been damaged, and water and sanitation infrastructure has broken down, leading to high rates of communicable diseases and reducing the likelihood of internally displaced people (IDPs) being able to reach a functioning health facility and receive care.⁴

More than 20 million people, or about two-thirds of Yemen's population, are food insecure. The December 2020 Integrated Food Security Phase Classification (IPC) analysis suggested there were pockets of famine-like conditions throughout the country for the first time since 2018, and projected that the number of people

experiencing the most acute levels of food insecurity (IPC 5) could triple by June 2021.^{5,6}

The damage the conflict has caused - a collapsing economy, widespread unemployment, disease outbreaks and reliance on humanitarian assistance - disproportionately affects IDPs. The country's worsening food insecurity will further aggravate their already challenging living conditions.

Covid-19 has caused a significant reduction in international aid for Yemen, heightening IDPs' vulnerabilities at the same time as the pandemic was increasing their needs.

The effects of climate change, such as more frequent and severe storms and floods, also trigger displacement and increase the risk of diarrhoeal disease and acute malnutrition.⁷ Frequently displaced to camps with few if any sanitation and hygiene services, limited access to healthcare and disproportionately high levels of food insecurity, IDPs face myriad health risks.

This paper discusses those risks, the effect of climate change in reducing IDPs' access to healthcare and triggering further displacement, and the impact of reduced humanitarian assistance on responses. The final section outlines the policy implications of these issues.

IDPS' HEALTH RISKS

Conflict, climate change, poor access to healthcare and increased risk of disease and food insecurity are mutually reinforcing risks for IDPs in Yemen. Those living in hosting sites - which range from relatively well organised buildings in urban communities to repurposed facilities such as schools and spontaneous informal settlements - are among the most vulnerable.

About 26 per cent of IDPs live in hosting sites, where basic services are often scarce.⁸ Aid providers at many sites deliver uncoordinated or unreliable assistance, leaving IDPs with only limited access to food, water, healthcare, and sanitation. This makes them more vulnerable to disease outbreaks, food insecurity and acute malnutrition.^{9,10}

Given Yemen's struggling health services, outbreaks of diseases for which there are simple, effective treatments have the potential to become severe and life-threatening, particularly among IDPs. These include diarrhoeal disease, the incidence of which tends to be prevalent among displaced people. This is due in part to a lack of basic water, sanitation and hygiene (WASH) services at their hosting sites, and in part to the fact that their settlements are unable to cope with heavy rains and flooding, which increase the risk of infections.¹¹

Diarrhoeal disease is also one of the main contributing factors to acute malnutrition among children. The resulting loss of appetite, malabsorption and loss of key nutrients puts them at greater risk. This risk is further

increased by the financial stress and limited access to aid that IDPs disproportionately face.^{12,13}

Malnourished children are also more likely to develop diarrhoeal disease, and to suffer severe symptoms and complications.¹⁴ Health and nutrition are closely linked in a "malnutrition-infection cycle" in which disease aggravates malnutrition and malnutrition makes people more susceptible to disease.¹⁵

The breakdown of the health system and the wider effects of the conflict have focussed attention on outbreaks of diarrhoeal disease and increasing malnutrition as clear indications of the country's crisis. However, treatment for other less apparent and chronic health issues including diabetes and cancer has also been disrupted. Services for non-communicable diseases and mental health conditions are only fully available in around a fifth of Yemen's health facilities.¹⁶

This also means that non-communicable diseases may go undiagnosed, making otherwise treatable conditions potentially life-threatening. Early-life undernutrition is a major risk factor for many non-communicable diseases.¹⁷

There is little data on mental health in the country, but the effects of war and crisis - exposure to violence, food insecurity, disease, lost social networks and economic stress - are likely to have led to a deterioration, while also reducing the availability of treatment and care. This is often the case during crises and particularly among IDPs.¹⁸

CLIMATE CHANGE, DISASTERS AND IDPS' ACCESS TO HEALTHCARE

Yemen's healthcare system has long faced significant challenges.¹⁹ Even before the conflict, only about half of the population had access to facilities.²⁰ The situation has improved slightly over the years, but the proportion of districts without any doctors is unchanged at 18 per cent.²¹

Conflict is the main factor to have disrupted the country's health services, but it is not the only one. Weather-related disasters are also an important but overlooked factor.^{22,23}

Yemen experienced heavy rains which caused flash floods in several governorates in April 2020, and a tropical storm struck the southern coast the same month. Abyan, Aden, Ad Dhalī', Hadhramaut, Lahj and Taiz governorates bore the brunt of the storm. At least 150,000 people were affected by the storm across 13 governorates, including 64,000 IDPs. At least 5,537 displaced families were affected by the rains in 69 locations across southern governorates.²⁴

Disasters may restrict access to healthcare by making roads impassable, isolating remote communities, destroying facilities, interrupting clean water supplies and disrupting economic activity. The latter reduces people's ability to pay for health services.

Yemen has no rail network, so roads are the only means of moving goods and people around.²⁵ Even before the conflict, however, only 28 per cent of the country's 50,000-kilometre road network was paved.^{26,27} That figure drops to 11 per cent in rural areas, which are home to 63 per cent of the population.²⁸ Unpaved roads are susceptible to being washed away in storms or becoming impassable during heavy rains. Hosting

sites for IDPs, particularly informal settlements, are more likely to have unpaved roads.

Disasters not only pose a risk to healthcare access, especially for IDPs. They have also damaged and destroyed people's homes, triggering displacement. This in turn decreases resilience and aggravates vulnerabilities, leading to greater needs and negative coping mechanisms.²⁹

As climate change progresses, Yemen is expected to experience ever more frequent and severe storms and flooding in low-lying coastal areas, and shortages of freshwater across the country as a whole.³⁰

The phenomenon is already playing a role in reducing the availability of freshwater for displaced communities. As groundwater sources recede deeper underground, more powerful pumps are needed to reach them, and few IDPs have such equipment.³¹ Instead they have little option but to use, and even drink, surface water and other unsafe supplies, which increases their risk of contracting diarrhoeal disease.³²

As previously reliable sources dwindle, water scarcity is and will continue to affect displacement in two ways: by triggering new displacement and by increasing tensions between IDPs and their hosts as they compete for water resources.³³ Examples of each have already been observed.

Irrigation for water-intensive crops is, on the one hand, a contributor to the country's water woes, but without it, economic activity dries up instead. Khat is a mild stimulant and Yemen's predominant cash crop. Its cultivation accounted for six per cent of GDP in 2007, employing



A child fills a bottle with contaminated water in Sana'a, Yemen. The ongoing crisis has left about 49 per cent of the population without access to safe water and placed internally displaced children at heightened risk of cholera and malnutrition. © UNICEF/UN050304/Yassin, May 2015.

one in seven working people.³⁴ More recent estimates show its cultivation accounted for 25 per cent of the GDP, employs 20 per cent of the working population and consumes 50 per cent of the country's water supply, despite only occupying 11 per cent of Yemen's agricultural land.³⁵ As sources of irrigation water run out, 14 per cent of working Yemenis and their families could be left without the means to pay for healthcare, medicines and nutritious food.³⁶

In an effort to prevent this fate befalling their families, heads of household are often forced into displacement, in some cases not for the first time, as they seek economic opportunities elsewhere.³⁷

Water scarcity is often thought of as a slow-onset phenomenon, but sometimes events can be triggered quite quickly. When a year-long drought hit the gover-

norate of al-Mahwit in 2008, thousands of people were displaced from the district of Hufash - population 40,000 - because farmers and their families were unable to irrigate their crops.³⁸

The number of people affected in this way is potentially much smaller than those who could be forced to leave their homes in search of clean water. About 13 million Yemenis struggled to meet their basic needs for clean water on a daily basis in 2015, though how many have since become displaced as a result is unknown.³⁹

There is, however, a danger of a vicious cycle being set up as people flee in search of water. The more people who move to exploit resources, the quicker they too will dry up, potentially leading to repeated displacements as growing numbers of IDPs try to find habitable and productive land.

THE IMPACT OF DECREASING AID ON IDPS' HEALTH

IDPs face increasing and mutually enforcing vulnerabilities when it comes to their health, but current levels of humanitarian assistance are not enough to break the cycle. Indeed, the amount of aid is declining while needs are rising. Eighty per cent of the population was reliant on some form of aid in 2019 and nearly 50 per cent were in acute need, an increase of 27 per cent on the figures for 2018.⁴⁰

The UN, however, received only \$1.3 billion for its Yemen operations in 2020, or about 40 per cent of the funding it needed, down from \$3.6 billion in 2019.⁴¹ This translates into fewer WASH services, fewer operational health facilities, less medical care and less nutritional and financial support, all of which IDPs have a disproportionate need for.

The funding fall-off is even worse for other areas of assistance, such as non-communicable diseases and mental health. These were already underfunded, and many programmes may have to close, leaving displaced children who are suffering from pervasive toxic stress without the support they need to recover. This in turn may lead to chronic conditions, compromised physical health and epigenetic changes across generations.⁴²

The situation is likely to force aid agencies to focus their efforts on locations where those in need are concentrated to maximise the number of people reached while keeping costs low. Such locations might include the three Mazraq displacement sites in the northern governorate of Hajjah and others elsewhere the country.⁴³

Many IDPs, however, will miss out if assistance is only distributed in this way. Most live in host communities rather than camps or camp-like settings.⁴⁴ Such an approach would also mean those determined to access aid would have to travel, if they were able to afford it, to agencies' distribution points, including the 17 per cent of IDPs who live in spontaneous settlements.⁴⁵

Yemen's fragile health system was unequipped to deal with the Covid-19 pandemic, given its limited testing capacity, lack of health facilities and severe shortages of medical supplies. Ansar Allah, also known as the Houthi movement, recorded only a few coronavirus cases in July 2020, abandoned social distancing measures and denied the virus was a risk. It has also obstructed the distribution of aid, including fuel and vital medical supplies such as personal protective equipment, in areas it controls. The situation has also contributed to mistrust of aid agencies among donors, leading to reductions in funding.⁴⁶

The diversion of health facilities and resources to cope with the pandemic has led to a further deterioration in other areas of healthcare, which among other things is projected to increase the number of people suffering acute food insecurity from two million to 3.2 million, even if food assistance is maintained.⁴⁷ The direct impact of the pandemic and its indirect effects on other areas of healthcare have been particularly acute for IDPs (see spotlight).

SPOTLIGHT:

COVID-19

The consequences of the pandemic for IDPs

When Yemen recorded its first case of Covid-19 in April 2020, there were concerns that the impacts of the virus would hit IDPs the hardest.⁴⁸ Their pre-existing vulnerabilities and weakened resilience were expected to heighten their risk of infection and being negatively affected by the fallout of the pandemic. To shed light on the issue, IDMC commissioned an online survey in November 2020 to investigate the impacts of Covid-19 on the health, livelihoods, housing, education and security of IDPs, IDP-returnees and non-displaced people.⁴⁹ More than 1,600 people completed the survey, including 381 IDPs, 252 IDP-returnees and 1,037 non-displaced people. The findings suggest Covid-19 has had negative effects on the lives of most respondents, but that they were particularly severe for IDPs.

IMPACTS ON HEALTH

Overcrowded living conditions, underlying health conditions, limited access to health services and poor hygiene and sanitation in the areas where IDPs live were expected to heighten their risk of contracting Covid-19.⁵⁰ Forty-five per cent of IDPs said they or someone in their household had experienced symptoms, compared with 30 per cent of non-displaced people.

The proportion of IDP-returnees reporting symptoms was also high, at 45 per cent. Despite having gone back to their communities, this group continues to have significant humanitarian needs. Many struggle to rebuild their properties, find decent shelter and access basic services.^{51,52}

All three groups cited the inability to distance from others as a key challenge in limiting the risk of catching or spreading the virus (see figure 1). Among IDPs, a greater proportion of those living outside displacement sites said they struggled to maintain social distancing, compared with those living in sites (see figure 2). A lack of hand-washing facilities appeared to be a particular challenge for IDPs living in sites.

FIGURE 1: Which challenges prevent you from limiting the risk of catching or spreading the virus (select all that apply)?

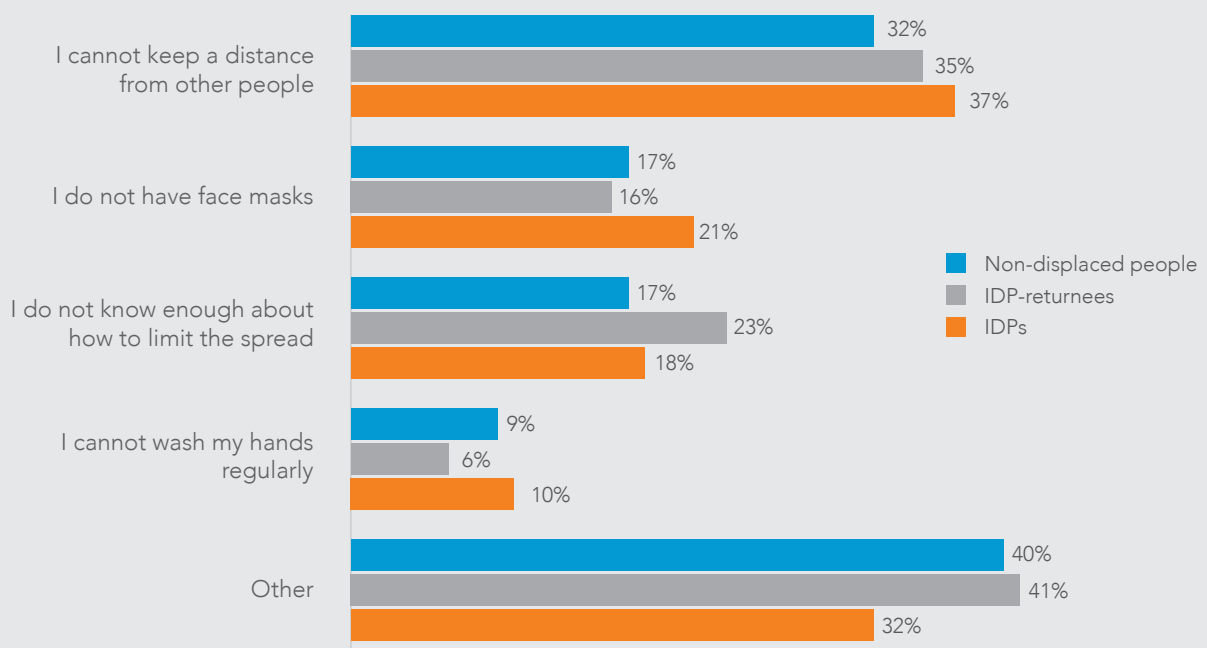


FIGURE 2: Which challenges prevent you from limiting the risk of catching or spreading the virus (select all that apply)?

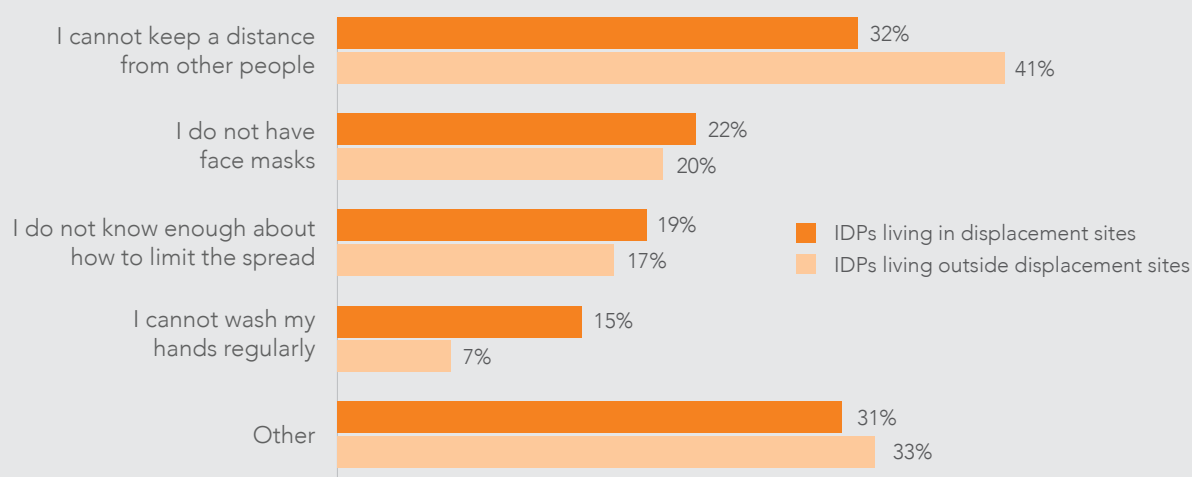
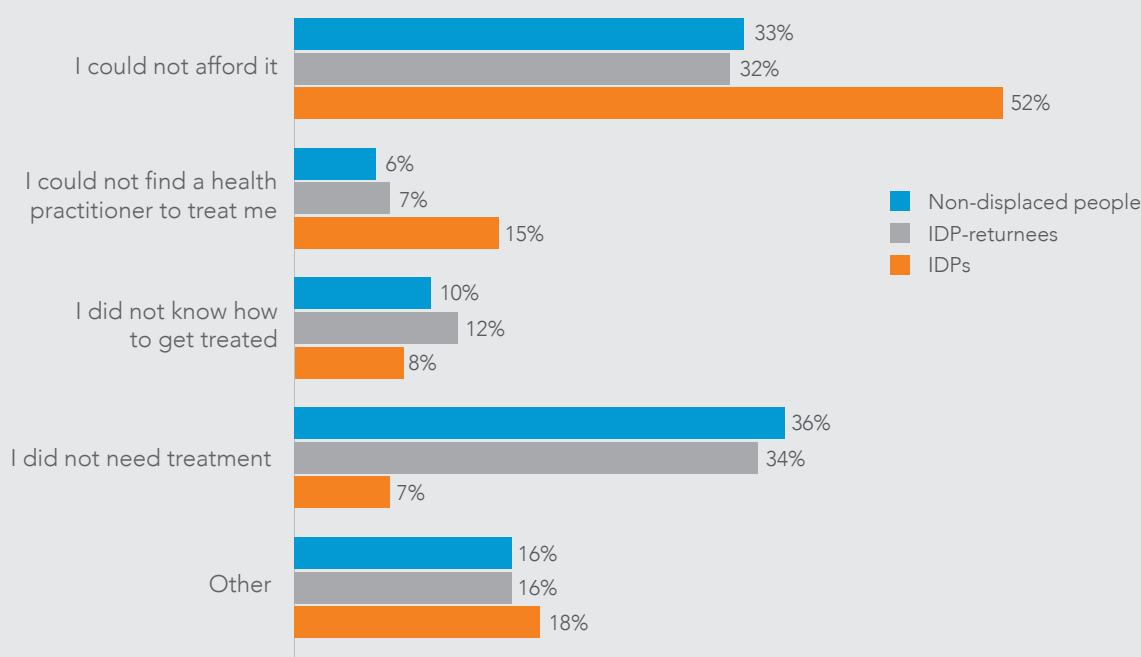


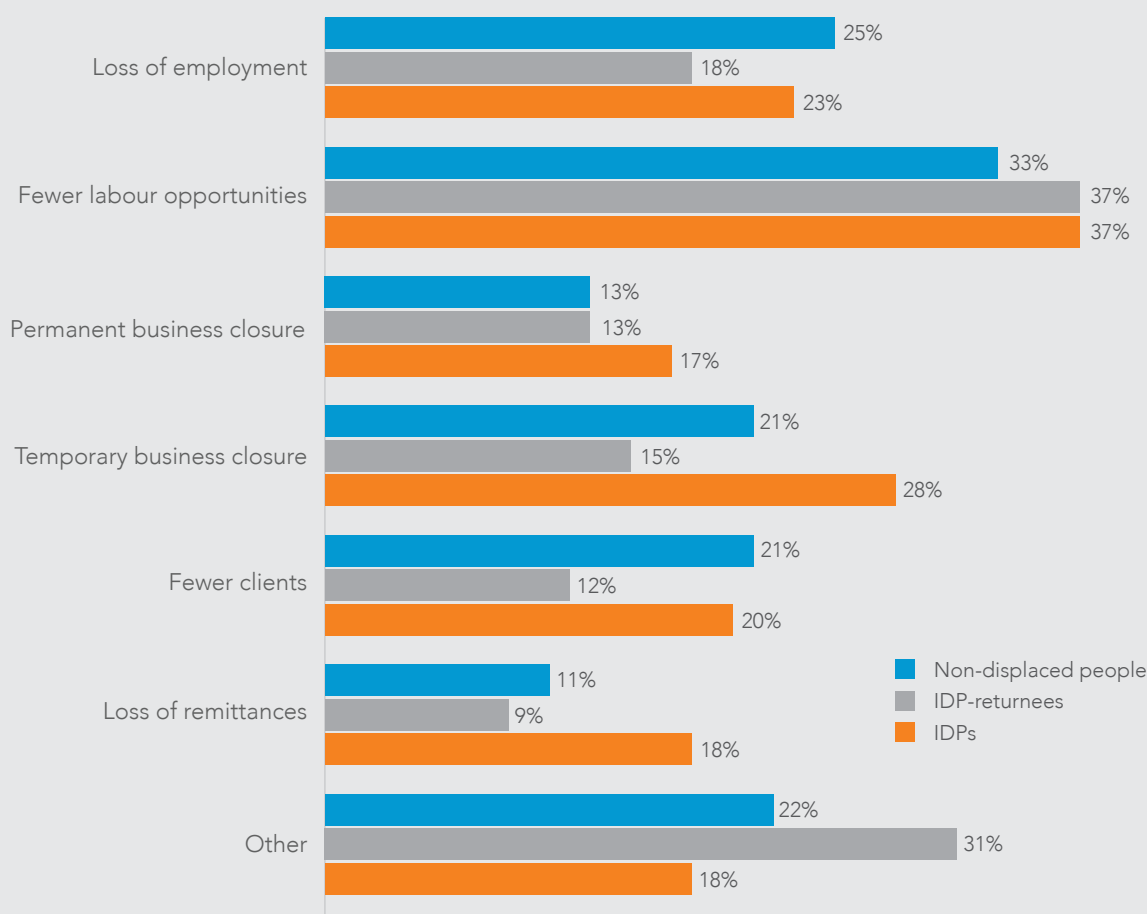
FIGURE 3: Why were you or your household member not treated for Covid-19 symptoms?



Of those who reported symptoms, 58 per cent of IDPs said they or their household member had not been treated, compared with 44 per cent of IDP-returnees and 46 per cent of non-displaced people. More than half of the IDPs cited cost as the main reason for not receiving treatment (see figure 3). The initial survey did not gather information on the kind of treatment people with symptoms received and how this varied across the three different groups. However, this should be investigated further.

The financial strain associated with Covid-19 and the extra burden the pandemic has placed on Yemen's fragile healthcare system have also raised other health issues for IDPs.^{53,54} Nearly two-thirds said their treatment for other chronic conditions had deteriorated, compared with about 45 per cent for both IDP-returnees and non-displaced people. Forty-three per cent of IDPs also reported feeling much more down, depressed or anxious compared with the same time the previous year. The figures were lower among IDP-returnees and non-displaced people, at 32 per cent and 25 per cent respectively.

FIGURE 4: Why has your household's income decreased compared to last year? (select all that apply)



IMPACTS ON LIVELIHOODS

As IDPs tend to depend more on insecure and informal employment than non-displaced people, there were fears that lockdown measures and the associated economic downturn would affect their livelihoods more than others.⁵⁵ Our survey, however, found that just over a third of both IDPs and non-displaced people reported a decrease in their household income compared with the same time the previous year. The figure among IDP-returnees was higher, at 41 per cent. “Fewer labour opportunities” was the most frequently cited reason by all three groups (see figure 4).

IMPACTS ON HOUSING

Despite the similar proportion of IDPs and non-displaced people experiencing a drop in income, some of the consequences have been particularly acute for IDPs.

Fourteen per cent said the financial difficulties associated with Covid-19 had forced them to leave their homes, twice the figure for non-displaced people. One in three IDPs feared they would be forced leave, compared with one in five non-displaced people (see figure 5). This is consistent with reports that IDPs living in rented accommodation and displacement sites struggled to pay their rent in 2020 and are particularly at risk of eviction.^{56,57}

IMPACTS ON EDUCATION

The economic strain has also affected IDPs’ access to education. Seventy-two per cent said Covid-19 had interrupted their children’s schooling, compared with 56 per cent of IDP-returnees and 59 per cent of non-displaced people. Half of the IDPs surveyed said their children had been out of school for more than six months, and many said they did not know whether they would ever go back to school (see figure 6).

FIGURE 5: How has Covid-19 affected your housing situation?

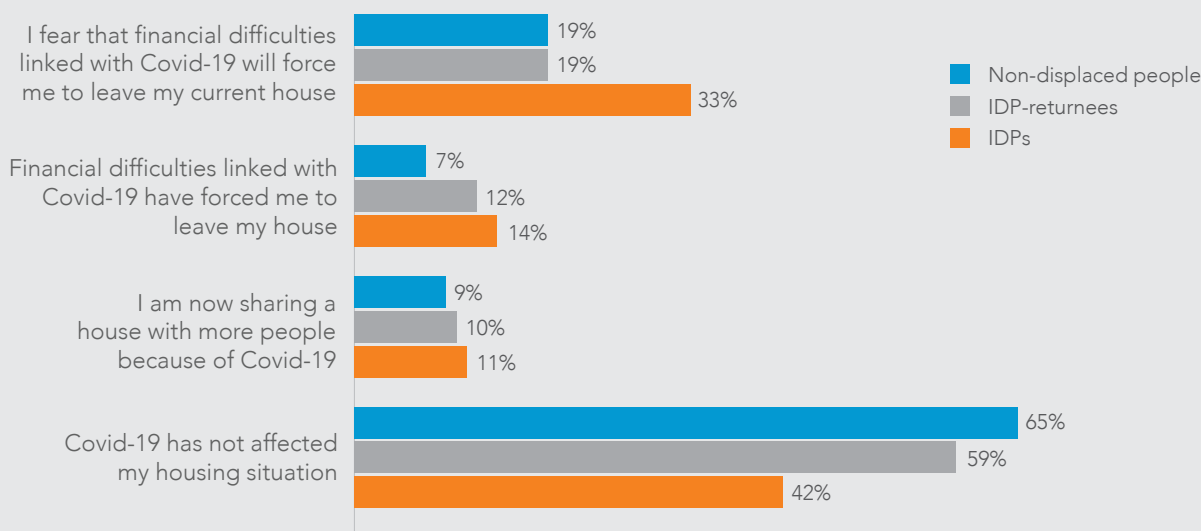
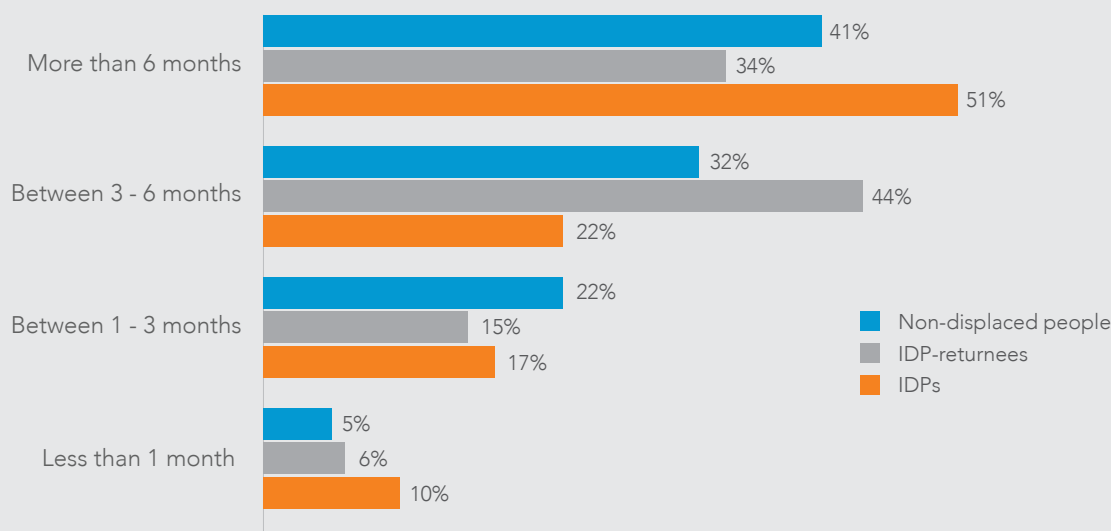


FIGURE 6: How long did your child stay out of school as a result of Covid-19?



School closures have caused significant disruption, but some schools have also informally introduced fees in an attempt to cover teachers’ salaries, which acts as a disincentive for poorer parents to keep their children in education.^{58,59} Other reports suggest displacement has led to dropouts and limited the enrolment of displaced children in temporary schools.⁶⁰

CONCLUSION

IDPs in Yemen face the highest possible level of displacement severity, and funding and access constraints continue to hamper the provision of vital humanitarian assistance.⁶¹ The Covid-19 pandemic has had a devastating impact on the lives of people across Yemen, but our survey’s findings suggest that many of the consequences have been particularly severe for IDPs. Understanding how IDPs will continue to be affected by the pandemic, both directly and indirectly, is vital to inform immediate responses and pave the way for longer-term recovery.

POLICY IMPLICATIONS

Given that IDPs face mutually reinforcing vulnerabilities when it comes to their health, understanding the ways in which various risks interact is vital to inform effective interventions and a tailored preparedness plan.

One such risk is linked to the increased frequency and intensity of weather-related events caused by climate change, and their effects on the country's health infrastructure and IDPs' access to healthcare.

Policies that improve health infrastructure are important to ensure that all Yemenis, including IDPs, receive the treatment and care they need, but a holistic approach that integrates development and humanitarian action is needed because improvements in other types of infrastructure are also required. The poor quality of Yemen's roads, for example, is a major hindrance to healthcare access.⁶²

Without transport infrastructure such as roads and bridges along with houses that are built to withstand more frequent and severe storms and floods, IDPs' health will suffer disproportionately.

This stems directly from the living conditions many IDPs face. Those in informal and formal displacement sites often live in makeshift shelters of mud and plastic sheeting that floodwaters can easily wash away.⁶³ While such policies are unlikely to make any major impact in such a global problem as climate change, they can ensure that all known IDP housing, regardless of location is able to withstand the increasing rains that are projected for Yemen. These policies are unlikely to protect IDPs and their housing locations from the devastation associated with a wide scale flood and so policies to mitigate flood risk, such as reinforcing dams, are also vital. Failure to take such measures is likely to mean an increase in secondary displacement.



A community health worker in Amran, Yemen, who spends her days travelling through her community to equip people with health information and refer them for healthcare services. Since the outbreak of COVID-19 she has been visiting communities conducting physically distant information sessions on how families can protect themselves. © UNICEF/UNI339516/Gabreez , June 2020.



A mother and her family in an IDP camp in Lahj governorate, southern Yemen. Her husband had to sell his motorbike to pay the hospital fees for her last pregnancy and they have reduced their food consumption due to lack of financial means. Her other daughter died last year due to acute watery diarrhea. © UNICEF/UN0320352/Baholis, February 2019.

Many displacement sites are also located near dams, which at best have been neglected because of the conflict and at worst may have been damaged. This recently led to a disaster in Hababa, when a breach of the al-Roone dam caused the uncontrolled release of 250,000 cubic metres of water, affecting thousands of IDPs in Al-Tahseen, Souq al-Lill and elsewhere.⁶⁴

Water control and management policies should not only focus on floods, but should also consider ways to conserve water and use it effectively so as to ensure there is enough to meet sanitation needs and allow economic development via agriculture. Given that the consumption of unclean water leads to diarrhoeal disease and all the resulting health complications that can follow, clean water should be a priority for both drinking and washing.

Supplemented with efforts to (re)connect IDPs' housing to existing water networks, such policies could substantially mitigate some of the WASH-based and nutrition-based risks IDPs face. This would not only reduce the burden of diarrhoeal disease but may also indirectly reduce malnutrition given the role of diarrhoeal disease as a strong predictor of the condition among children.

Given the increasingly limited funding and resources available to humanitarian agencies, they should assess the relative benefits of intervening at various stages of the cycle of vulnerabilities that IDPs face – an interaction between food insecurity, lack of economic opportunities, unhealthy coping mechanisms, lack of access to healthcare and basic services and persistent untreated disease.

CONCLUSION

The health challenges, such as undernutrition and diarrhoeal diseases, faced by Yemenis in general and IDPs in particular are great, and the effects of climate change are likely to aggravate them in the near future. Many of these challenges were brought on by the country's conflict, but any end to fighting will unfortunately not signal an end to suffering for IDPs, whose need for support has become protracted.

Humanitarian funding cuts complicate the situation further, coming at a time when the number of people in need of assistance is projected to grow. This has the

potential to increase inequity between the few, mostly non-displaced people, who have access to or able to afford services, and those - including IDPs - who cannot.

Only when the interconnected challenges IDPs face are fully understood can targeted policies be introduced that provide meaningful support in an integrated and holistic way. This in turn will improve IDPs' health in the short and longer term and could assist in ensuring that funding and resources have additional impact without any additional cost.



A young boy displaced by conflict tries to study on his own while living in Al-Meshqafa camp in the Lahj governorate of Yemen. Nationwide school closures imposed in March 2020 in response to the Covid-19 outbreak meant he was no longer able to attend primary school in the camp. NRC/ Mahmoud Al-Filstini, July 2020.

NOTES

- 1 IDMC, [Internal displacement 2020: Mid-year update](#), 2020.
- 2 IDMC, [Global Report on Internal Displacement 2021](#), May 2021.
- 3 Suprenant, M. P. et al., A predictive model for healthcare coverage in Yemen, *Confl. Health* 14, 1–16, 2020.
- 4 World Health Organisation, Health system in Yemen close to collapse, *Bulletin of the World Health Organisation*, 670–671 (2015) doi:10.2471/BLT.15.021015.
- 5 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), [Yemen: 2019 Humanitarian Needs Overview](#), 2019.
- 6 IPC, [Yemen: Integrated Food Security Phase Classification Snapshot \(October 2020 - June 2021\)](#), December 2020.
- 7 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), [Yemen: Flood Snapshot \(As of 28 September 2020\)](#), October 2020.
- 8 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), [Yemen: 2019 Humanitarian Needs Overview](#), 2019.
- 9 IPC. Yemen: Integrated Food Security Phase Classification Snapshot (October 2020 - June 2021) - Yemen | ReliefWeb. <https://reliefweb.int/report/yemen/yemen-integrated-food-security-phase-classification-snapshot-october-2020-june-2021>.
- 10 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), [Yemen: 2019 Humanitarian Needs Overview](#), 2019.
- 11 Camp Coordination and Camp Management (CCCM) Cluster, [Guidelines for IDP hosting sites in Yemen](#), 2017.
- 12 Bigg, M., [Support for internally displaced people needs to be 'urgently stepped up'](#), 2020
- 13 Ferdous, F. et al., Severity of Diarrhea and Malnutrition among Under Five-Year-Old Children in Rural Bangladesh. *The American Journal of Tropical Medicine and Hygiene* 89, 223-228, 2013.
- 14 Brown, K. H. Diarrhea and Malnutrition. *J. Nutr* 133, 336–340, 2003.
- 15 Brown, K. H., Diarrhea and Malnutrition, *J. Nutr* 133, 336–340, 2003.
- 16 World Health Organization Eastern Mediterranean Regional Office, [Survey reveals extent of damage to Yemen's health system](#), 2016.
- 17 Branca, F. et al., Transforming the food system to fight non-communicable diseases, *BMJ* 364, 2019.
- 18 Sana'a Center for Strategic Studies, [The Impact of War on Mental Health in Yemen: a Neglected Crisis](#), 2017.
- 19 United Nations Development Programme, [Human Development Index](#), 2019.
- 20 El Bcheraoui, C., Jumaan, A. O., Collison, M. L., Daoud, F. & Mokdad, A. H., Health in Yemen: losing ground in war time, *Global. Health* 14, 42, 2018.
- 21 World Health Organization, Yemen: Health Resources and Services Availability Mapping System 2018 (HeRAMS), 2019.
- 22 Suprenant, M. P. et al., A predictive model for healthcare coverage in Yemen, *Confl. Health* 14, 1–16, 2020.
- 23 Hussein, R. et al., A Model for Improved Estimates of Child Wasting in Yemen: Capturing the Effects of Conflict and Seasonal Variability In Incidence Estimates, 2020, doi:10.21203/rs.3.rs-110943/v1
- 24 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), [Yemen: Floods - Mar 2020](#), March 2020.
- 25 MOPHP/Yemen, M. of P. H. and P.- & CSO/Yemen, C. S. O.-. Yemen National Health and Demographic Survey 2013, 2015.
- 26 World Bank, [Yemen Transport Sector](#), 2017.
- 27 AL-Shikh, H. N. S. & Raju, V., Logistics in Yemen: Optimal Intermodal Freight Transportation, *Int. J. Humanit. Cult. Stud. (IJHCS)* ISSN 2356-5926 4, 15–24, 2017.
- 28 World Bank, [Rural population \(% of total population\) - Yemen, Rep. | Data](#), 2019.
- 29 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), [Yemen: 2019 Humanitarian Needs Overview](#), 2019.
- 30 Husain, T. & Chaudhary, J. R., Human Health Risk Assessment due to Global Warming – A Case Study of the Gulf Countries, *Int. J. Environ. Res. Public Heal.* 5, 204–212, 1970.
- 31 Camp Coordination and Camp Management (CCCM) Cluster, [Guidelines for IDP hosting sites in Yemen](#), 2017.
- 32 Deshpande, A. et al., Mapping geographical inequalities in access to drinking water and sanitation facilities in low-income and middle-income countries, 2000–17, *Lancet Glob. Heal.* 8, e1162–e1185, 2020.
- 33 Werrell Caitlin & Femia, F., [A Storm Without Rain: Yemen, Water, Climate Change, and Conflict](#), The Center for Climate & Security, 2016.
- 34 World Bank Blogs, [Yemen's Oat Addiction Worsens](#), 2014.
- 35 Fanack, [Economy of Yemen](#), 2020
- 36 Office of the High Commissioner for Human Rights, [Yemen information contribution on internal displacement, in the context of natural disasters and climate change](#).
- 37 Office of the High Commissioner for Human Rights, [Yemen information contribution on internal displacement, in the context of natural disasters and climate change](#).
- 38 The New Humanitarian, [Drought displaces thousands in mountainous northwest](#), 2008.
- 39 Suter, M., [Running out of water: Conflict and water scarcity in Yemen and Syria](#), Atlantic Council, 2017.
- 40 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), [Yemen: 2019 Humanitarian Needs Overview](#), 2019.
- 41 The New Humanitarian, [Yemen: Fighting, funding, and food](#), 2020.
- 42 Atallahjan, A. et al., Mitigating toxic stress in children affected by conflict and displacement, *BMJ* 371, 2020.
- 43 Integrated Regional Informational Networks, [Yemen: IDP/ refugee camps - facts and figures](#), 2010.
- 44 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), [Yemen: 2019 Humanitarian Needs Overview](#), 2019.
- 45 Camp Coordination and Camp Management (CCCM) Cluster, [Guidelines for IDP hosting sites in Yemen](#), 2017.
- 46 Human Rights Watch, [Deadly Consequences Obstruction of Aid in Yemen During Covid-19](#), 2020.
- 47 IPC, [Yemen Partial Analysis \(133 districts\): High levels of food insecurity persist, amidst deterioration of the economy, conflict and impact of the COVID-19 pandemic](#), 2020.
- 48 See e.g. IDMC, [Uprooted by conflict, now threatened by coronavirus](#), April 2020; HRW, [Yemen: Displaced at Heightened Covid-19 Risk](#), 22 May 2020.
- 49 The survey was conducted by RIWI using innovative technology to deliver anonymous, opt-in surveys to web users while surfing the internet on smartphones or desktop devices. All internet users in Yemen over the age of 18 had an equal




random probability of coming across the survey. Over 6,000 web users across the country responded to the survey over a two-week period. More than 1,600 respondents completed all questions, including: 381 people currently displaced by conflict, violence, and disasters (“IDPs”); 252 people who had previously been displaced but had since returned to their homes (“IDP-returnees”); and 1,037 people who had never been displaced before (“non-displaced people”). The findings of the survey are not representative of the whole displaced or non-displaced populations in Yemen, and were limited to the internet-using population. In the context of Yemen, the respondent pool was largely male, which is to be expected given the digital gender divide and unequal access to technology in the country. To combat the discrepancy between online and national population demographics, weights were applied to adjust for age and sex based on census data. Accordingly, all figures presented here are weighted.

- 50 HRW, [Yemen: Displaced at Heightened Covid-19 Risk](#), 22 May 2020.
- 51 See e.g. OCHA, [Yemen: Humanitarian Needs Overview 2021](#), February 2021.
- 52 Shelter Cluster Yemen, [Shelter Cluster Winterization Recommendations for Yemen October 2020 – February 2021](#), 2020.
- 53 MSF, [“COVID-19 has made the health system’s collapse complete” in Yemen](#), 10 June 2020.
- 54 OCHA, [Yemen Health Cluster: “We need to respond to all health needs, not just COVID-19”](#), 15 May 2020.
- 55 IDMC, [Internal displacement 2020: Mid-year update](#), September 2020.
- 56 See e.g. UNHCR, [Eligibility verification survey for rental subsidy extension 2020-21](#), 17 December 2020.
- 57 CCCM Cluster, [Note on Evictions in IDP Hosting Sites](#), September 2020.
- 58 UNICEF, [Schools reopen in Yemen after months of closure due to COVID-19](#), 17 October 2020.
- 59 Yemen Education Cluster, [Yemen Education Crisis: 2020 Secondary Data Review \(SDR\) Report](#), 17 August 2020.
- 60 Ibid.
- 61 IDMC, [Displacement severity on the rise after a challenging year](#), January 2021.
- 62 Suprenant, M. P. et al., A predictive model for healthcare coverage in Yemen, *Confl. Health* 14, 1–16, 2020.
- 63 UNHCR, [300,000 people lose homes, incomes, food supplies and belongings due to catastrophic flooding in Yemen](#), 2020.
- 64 UNHCR, [300,000 people lose homes, incomes, food supplies and belongings due to catastrophic flooding in Yemen](#), 2020.



Every day, people flee conflict and disasters and become displaced inside their own countries. IDMC provides data and analysis and supports partners to identify and implement solutions to internal displacement.

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