

## Causes of low vaccination rates and impacts on different population groups

### OVERVIEW

Yemen is highly susceptible to disease outbreaks, especially vaccine-preventable ones, such as cholera, diphtheria, pertussis, measles, polio, and other transmissible diseases (WHO 31/08/2023; UN 08/05/2023; GPEI 06/03/2023).

In 2017, the cholera epidemic peaked in Yemen with an alarming increase of more than 200,000 suspected cases (equal to an average increase of 5,000 cases per day) (UN 24/06/2017). In 2017 and 2019, Yemen accounted for 84% and 93%, respectively, of global cholera cases, affecting children the most (Ilic and Ilic 13/03/2023). In 2020, there was a resurgence of polio cases, previously declared eradicated in the country in 2006 (WHO accessed 04/10/2023; Khuyut 30/03/2023). In the first quarter of 2023 alone, there were over 13,000 measles cases, 8,777 dengue fever cases, and 2,080 suspected cholera cases reported, with actual figures estimated to be higher (UN 21/04/2023).

Yemen's already fragile and heavily strained healthcare infrastructure, coupled with inadequate population immunity to vaccine-preventable illnesses, heightens the risk of more rapid and widespread disease outbreaks (UN 08/05/2023). At the same time, overall immunisation coverage in the country is rapidly declining, disproportionately affecting children, older people, women, IDPs, refugees, and asylum seekers (WHO 31/08/2023; UN 08/05/2023; GPEI 06/03/2023). The low vaccine coverage affects children the most, with nearly one-third of the under-one population missing routine vaccinations (UN 21/04/2023).

Vaccine hesitancy and a lack of awareness of vaccination importance are associated with Yemen's low immunisation coverage. The de-facto authority (DFA) in the north of Yemen, also known as the Houthis, further encourages scepticism towards vaccination by imposing strict restrictions on vaccination campaigns in response to communicable disease outbreaks. The DFA also imposes logistical restrictions that further challenge the response, such as permit denials or delays for responders attempting to reach affected communities in DFA areas. Other factors include the lack of access to functioning health facilities due to low functionality and logistical issues such as the price and availability of fuel and road conditions, the decline of international funding further collapsing Yemen's already fragile health system, and gender-specific mobility restrictions.

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### About this report

**Aim:** this research aims to investigate the causes, challenges, and impacts of low vaccination coverage on various population groups in Yemen. The goal is to guide decision-making and programme development and enhance vaccine coverage and readiness to address the consequences of low vaccination rates in the country. The intended audience includes humanitarian and development programme designers, donors with early recovery and resilience mandates, the broader donor community, local organisations, community-based organisations, and health service providers.

**Methodology:** this report relies on secondary sources, as well as two key informant interviews and one focus group discussion in September 2023 with Yemenis from the humanitarian sector in different governorates.

**Scope:** the report covers the whole of Yemen, including areas under the Internationally Recognized Government of Yemen (IRG) and the DFA, taking into account data availability, control area differences, data biases, and other relevant features.

### Gaps and limitations

Vaccination rate data in IRG areas is only accessible with the Ministry of Health's formal permission and unavailable with regard to communicable disease outbreaks in DFA areas. Routine vaccination data is also inaccessible, even if available, in DFA areas.

The lack of sufficient disaggregated data poses significant challenges for understanding and addressing the specific needs and vulnerabilities of different population groups. This lack challenges designing targeted interventions and policies to effectively address these groups' unique concerns and inequalities.

## FACTORS CONTRIBUTING TO DECREASED AND LOW VACCINATION RATES IN YEMEN

### Censorship, vaccine scepticism, and anti-Western sentiment

Among many contributing factors, vaccine hesitancy and general mistrust towards immunisation campaigns result in Yemen's low vaccination rates (FGD 25/09/2023; ACAPS 10/01/2022). There are multiple reasons for the growing vaccine hesitancy among the public, including active misinformation campaigns by DFA authorities, the proliferation of misleading information, and anti-Western sentiments resulting in mistrust in international responders, including vaccine distributors. Other reasons include concerns about vaccine safety and efficacy, political polarisation, a lack of health awareness campaigns, mistrust in vaccination producers from low-income countries such as India, and overall health illiteracy (IMC 16/03/2023; Internews 10/04/2023; ACAPS 10/01/2022 and 20/06/2023; FGD 25/09/2023).

Vaccine hesitancy is typically more pronounced in DFA areas given its track record in influencing public sentiment and discouraging vaccine adoption (ACAPS 20/06/2023). The DFA influences public opinion through two primary methods: the suppression of relevant information and the active dissemination of misinformation and misconceptions around vaccination.

During the COVID-19 pandemic, the DFA actively suppressed all information on pandemic dangers and deliberately withheld data about active COVID-19 cases (HRW 01/06/2021). Likewise, the DFA is actively preventing the public from gaining any knowledge regarding the recent alarming increase in the measles case rate and potential outbreak consequences (FGD 25/09/2023).

For the past few years, some individuals and organisations associated with the DFA in Sana'a have stirred controversy by aggressively engaging in vaccination rumours (Khuyut 30/03/2023; HRW 01/06/2021; FGD 25/09/2023). Most of these rumours revolve around conspiracy theories, the most prominent of which is the belief that vaccination causes infertility issues (FGD 25/09/2023). Given that approximately 80% of the Yemeni population resides under the DFA's direct authority, such rumours gain momentum not only in DFA-controlled regions but also across the entire country (ACAPS 10/01/2022 and 20/06/2023).

Routine vaccination in northern Yemen is permitted but extremely limited. During an event orchestrated and attended by prominent DFA government figures, acting Minister of Health Dr. Taha Al-Mutawakel stated that the ministry does not prevent nor enforce mandatory

routine vaccination and that citizens are responsible for any vaccination consequences (Al-Thawra 08/02/2023). Across Yemen, vaccination turnout remains low primarily because of the public's limited knowledge of and general mistrust towards vaccination (FGD 25/09/2023).

The DFA has also put a veto on any public discussions about vaccine-preventable disease outbreaks. Any awareness campaign created in response to the growing risks of vaccine-preventable diseases is strictly censored, if not entirely prohibited (KII 25/09/2023; FGD 15/09/2023).

### Challenges related to policy and permissions from the authorities

In Yemen, access limitations result mostly from bureaucratic and policy challenges instead of direct security-related considerations. Common challenges are movement and access restrictions, as well as delays in the granting of travel permits (OCHA 20/06/2022). Overall, political constraints hinder aid organisations' ability to carry out their work effectively by restricting humanitarian responders' mobility and access to the vital information needed for aid delivery (Humanitarian Outcomes 03/2022).

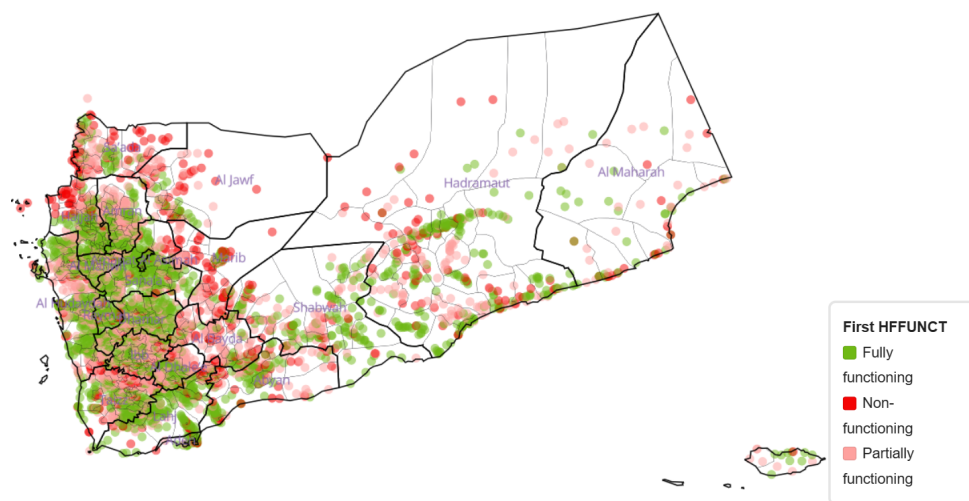
Humanitarian access challenges are notably pronounced in northern Yemen, which is under DFA control. In IRG areas, bureaucratic constraints still present a challenge but are significantly less severe (Humanitarian Outcomes 03/2022).

Such severe constraints affect humanitarians' ability to provide aid, including urgently needed vaccines. In 2017, the DFA denied landing permission to a UN-chartered aircraft carrying half a million cholera vaccine doses destined for Yemen, with clearance for the vaccines granted almost a year later (AP 09/04/2019). Similarly, during the COVID-19 pandemic, the DFA's unwillingness to cooperate with the WHO and the Yemeni Government prevented any vaccines from reaching the north (HRW 01/06/2021).

In 2021, during a poliovirus outbreak, the DFA effectively obstructed house-to-house vaccination campaigns and limited immunisation to healthcare facilities. The DFA not only restricted vaccination to specific sites but also banned community outreach services, limiting targeted communities' access to medical staff (Internews 17/08/2023; UN 08/05/2023; KII 25/09/2023). While multiple measles and polio vaccination campaigns have been implemented in the southern governorates, the deadlock in the northern governorates has allowed the polio outbreak to continue (UN 08/05/2023; Internews 17/08/2023).

## Challenges related to healthcare system access constraints and functionality

### Functionality of health facilities



Source: WHO (accessed 08/10/2023)

Health institutions' accessibility and overall functionality also affect vaccination rates. The conflict in Yemen has worsened an already weak healthcare system, which was already grappling with substantial challenges and constraints. Official documents from the Yemeni Ministry of Health in 2011 indicate that certain governorates were already experiencing shortages in physicians and capacity and healthcare access disparities were prevalent across the nation (IPI 30/01/2018). In 2023, the situation remains challenging because health facilities still lack staff, medical supplies, and equipment, especially in rural areas (MSF 16/08/2023).

What makes access more difficult is that the majority of physicians are in urban areas, when a significant portion of the population resides in rural areas. Health services in rural areas cover only about one-third of the population (Hussein et al. 25/09/2020).

In practical terms, this means that a significant portion of the population faces consequential limitations in accessing healthcare facilities (KII 15/09/2023). A 2018 study found that approximately 42% of Yemenis had to travel for over an hour to reach the nearest public hospital, which was either fully or partially operational, while 31% lived more than half an

hour away by motorised transport from a public healthcare facility (Garber et al. 11/2020; NRC 17/02/2023).

Financial obstacles also significantly hinder individuals from accessing basic healthcare services, including vaccination (MSF 16/08/2023). The inaccessibility of hospitals and medical care facilities is compounded by increasing inflation, rising poverty, and high fuel costs. With 80% of Yemenis living below the poverty line, only a fraction of the population can afford to travel for medical purposes (ICRC accessed 20/09/2023). The majority of people travel to healthcare facilities only in case of emergencies. In such an economic environment, travelling for preventive medicine, including routine vaccination, is not considered an emergency and is a luxury inaccessible to most (KII 15/09/2023). The issue of accessibility is particularly concerning in the northern regions under DFA control, where house-to-house vaccination has been restricted and immunisation strictly confined to fixed-site healthcare facilities (UN 08/05/2023; KII 15/09/2023).

### Sharp decline in international funding

Yemen's healthcare system functioning heavily depends on external funding, and aid organisations predominantly deliver healthcare services (WB 14/09/2021). The rapid decrease in external funding is a critical contributing factor to the current health crisis.

As at September 2023, only 31.8% of the USD 4.3 billion required for the 2023 humanitarian response in Yemen had been funded (OCHA accessed 19/09/2023). External funding for healthcare peaked at USD 605 million in 2018 and then declined to USD 370 million the following year (Devex 17/09/2021). In 2023, the funding has witnessed an even further decline, meeting only 27.8% of the health sector's needs as at September 2023. Overall, of the USD 392 million needed to address fundamental healthcare needs in Yemen, only USD 109 million has been allocated (OCHA accessed 19/09/2023).

Yemen's healthcare workers and medical staff are dependent on incentives from humanitarian organisations (ICRC 05/08/2021). The decline in the healthcare system's external funding presents a dire challenge, inevitably affecting vaccine coverage and the overall health of Yemeni citizens.

### Gender-specific mobility and accessibility constraints

As a result of the prolonged conflict, both men and women are prone to mobility restrictions, which hinder their capacity to actively participate in vaccination initiatives or accompany young children to hospitals for vaccinations. Women deal with numerous factors that ultimately restrict their mobility significantly. Men also face distinct vulnerabilities, such as the risk of forced recruitment and arbitrary detention by armed forces (IRC 29/01/2020). Men

are especially targeted at checkpoints and risk arrest or detention when travelling, which can affect their willingness and ability to undertake long-distance travel for medical purposes (Mwatana 30/06/2020; CARE et al. 11/2016).

Women and girls face many mobility restrictions. The key issues include strict cultural norms that place limitations on women, compounded by the specific constraints enforced by the conflicting parties (AI 16/12/2019). In some areas, women cannot travel alone, particularly in DFA regions where, since 2015, the implementation of policies and regulations aimed at exerting social and religious control has been gradually escalating (ACAPS 05/11/2021). These restrictions have disproportionately affected women; one of the most notable is the travel requirement of having an accompanying Mahram (male guardian) or written approval from a male relative (ACAPS 05/05/2023; AI 01/09/2022).

Throughout the COVID-19 outbreak, vaccine distribution planning did not sufficiently consider the stringent gender segregation prevalent in Yemeni society, making it a significant obstacle to the vaccination of women and girls (ACAPS 10/01/2022).

## IMPACT OF LOW-VACCINE COVERAGE ON DIFFERENT POPULATION GROUPS

### Children

The major causes of childhood mortality in Yemen include measles and rubella, both highly contagious viral diseases. From 2022–2023, child mortality rates increased because of these diseases, with 413 child deaths recorded as at July 2023 in contrast to the 220 cases reported in 2022. Both diseases have no specific treatment available but can be effectively prevented through vaccination (UN 31/08/2023).

The UN estimates that roughly 27% of children in Yemen have either not received the measles and rubella vaccines or have not completed the required doses for full protection (UN 31/08/2023). Reduced international funding is an additional complicating factor. Ideally, the outbreak response vaccination campaign should aim to cover all children below the age of ten to ensure comprehensive and effective coverage. The existing funding gap has diminished support and restricted the target to under-five children, the age group with higher mortality rates (Xinhua 01/09/2023). As immunisation coverage rapidly diminishes, an unusually elevated mortality rate is expected to increase among children (UN 08/05/2023). This is further compounded by acute malnutrition, which, as at April, had affected approximately 540,000 under-five children in 2023 (UN 21/04/2023).

### IDPs, refugees, and asylum seekers

In the Middle East and North Africa, Yemen ranks among the five countries with the highest numbers of IDPs. Yemen is home to approximately 4.5 million IDPs (around 14% of the population), as well as over 97,000 refugees and asylum seekers, most of whom are from Somalia and Ethiopia (IDMC 11/05/2023; UNHCR 24/03/2023).

The majority of IDPs, refugees, and asylum seekers in Yemen endure overcrowded living conditions, inadequate sanitation, and a general lack of healthcare services, making them more vulnerable to communicable disease outbreaks (REACH 24/06/2021; IDMC 09/06/2021; ACAPS 14/04/2023; UNHCR 09/09/2020). Refugees and asylum seekers could face additional discrimination as during the COVID-19 pandemic, when they were regarded as introducers of the disease to the host community (UNHCR 09/09/2020).

### Older people

According to recent studies, 65 million older people in Yemen are prone to both starvation and exposure to communicable diseases, such as cholera and COVID-19. The elderly in Yemen also disproportionately suffer from the elevated costs of essential food items, leading many of them to cut back on their food purchases, restrict their daily caloric intake, and decrease meal portion sizes (HelpAge 27/03/2023).

Older people are increasingly prone to a disproportionate impact of communicable diseases. In general, they are more susceptible because of compromised immune systems, an increased susceptibility to infections, and reduced vaccine responsiveness. Vaccine-preventable illnesses that pose a risk to the elderly include influenza, pneumococcal infections, herpes zoster, and COVID-19 (Soegiarto and Purnomosari 22/04/2023). Low vaccine coverage poses additional threats to this age group, especially when combined with limited access to food, fragile age, and deteriorating health.

### Women, pregnant and lactating women, and girls

Yemen's disrupted healthcare infrastructure has particularly affected women and girls, particularly IDPs, with women, newborns, and children comprising an estimated 77% of IDPs in the country (UNFPA 28/02/2023).

In Yemen, women more frequently take on primary caregiving responsibilities and bear most of the household responsibilities, making them more likely to contract communicable diseases while at home (TNH 08/08/2017). Along with their active role as caregivers, Yemeni

women in some governorates also face the burden of limited mobility. With mobility restrictions in place, the decision falls upon men as to when, how, and why women should seek healthcare, potentially hindering women's ability to reach vaccination centres (WHO 31/08/2022). During the COVID-19 outbreak, for every three men, only one woman received a COVID-19 vaccine. Besides facing mobility restrictions, women are also less likely to travel outside Yemen for work, making them less likely to get vaccinated, as international travel serves as a key motivator for vaccination (WHO 31/08/2022; ACAPS 10/01/2022).

The shortage of female healthcare workers and medical personnel in remote rural areas further challenges the situation. Certain societal standards prevent women from mixing with men, even for medical purposes, meaning women and girls might avoid going to medical facilities with only male staff available (CARE et al. 11/2016).

## Al Muhamasheen

Commonly referred to as Akhdam (from the Arabic term for servants), Al Muhamasheen are a historically disadvantaged group frequently subjected to systemic discrimination based on the widespread belief that they are descendants of servants. In Yemen, Al Muhamasheen are treated as the lowest social class in the country (IDSN 01/10/2015; ACTED et al. 21/03/2023). A lack of official statistics challenges finding the exact number of Al Muhamasheen in Yemen, with estimates ranging from 500,000 to 3.5 million (SCSS 13/07/2021).

Just like IDPs, refugees, and asylum seekers, Al Muhamasheen face heightened risks of communicable diseases because of overcrowded living conditions and a lack of access to basic services, such as water and sanitation (ACAPS 10/01/2022; MSF 11/03/2021). They also receive less humanitarian aid than other groups and are systemically excluded from assistance (SCSS 13/07/2021).