

# Understanding health seeking behaviors to inform COVID-19 surveillance and detection in resource-scarce settings

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As the COVID-19 pandemic continues its deadly reign all over the world, devising and implementing effective strategy for detecting and controlling the infection has become ever more critical. While a number of developed countries have utilized mass community testing of suspected infection to effectively manage the spread and severity of the pandemic, less-developed nations struggle to implement similar measure due to various financial and human resource constraints faced by their health system. In this viewpoint, we discuss how by understanding health seeking behavior of a country's population, developing countries can identify and set priorities to most resource-efficient disease management measures, which then would help them achieve successes in controlling COVID-19 in their countries. The viewpoint concludes with an example of such success cases.

As of July 18, 2020, there have been over 13.8 million confirmed cases of SARS-COV-2 with death toll amounted to 593087 [1]. A number of countries, mostly developed nations with long-considered ad-

Since mass COVID-19 testing may be challenging for resource-scarce settings, effective disease management in developing countries need to resolve to different measures, which can be identified and prioritized by understanding health seeking behavior of a country's population.

vanced health care system have started rolling out mass community testing for the virus, alongside with restrictions on population mobility. Some experts have argued that population-wide testing is a more reliable and reasonable way of detecting and controlling the infection – as the economy and individual's mental health suffer the side effects of quarantine and social distancing, while the uncertainty of when the disease will peak and what follows is still looming [2]. The situation is more complicated, though, for developing nations with frequently over-burdened health system and rather diverse health seeking behaviors, such that community-wide testing per se may not be the most appropriate and effective choice.

The lack of health professionals, limited financial resources for health care, and the under-developed health infrastructure may all be challenges in implementing mass testing of SARS-COV-2 in the community in developing countries. In a time of need for pandemic response, even mobilization of resources and support from donations may not help overcome these problems completely. Setting priorities to target interventions by identifying suspected cases in various geographical locations requires the understand-



As the common practice of many developing nations' citizens is contacting local pharmacists and non-official health providers firstly when having health problems, these local health gatekeepers should be involved as first point of case detection, while accurate information regarding COVID-19 prevention and control can also be delivered through them in timely manner. Utilizing local health gatekeepers has indeed been at the core of current success story of Vietnam in COVID-19 management.

ing of health seeking behaviors among local communities. While most people in Western countries visit health clinics or family doctors when perceiving a health problem, previous studies have described various contextual factors and barriers that shape access and utilization of health care services in resource-scarce settings [3,4]. Many residents prefer to purchase un-prescribed medications at pharmacies for self-treatment, or visit traditional healers, private or non-registered clinics, rather than hospitals and official health stations as places of first contact for health issues (for example, people in Pakistan regions (39.1%) and Indonesia regions (42.9%) preferred going to pharmacy first to treat illness; **Table 1**). This would be a larger

obstacle to confirming and monitoring cases, especially in the early stages of COVID-19 epidemics, including cases importation and cluster transmission.

**Table 1.** Examples of health seeking behaviors in countries with frequent local epidemics (Unit: %)

REF.	COUNTRIES	DISTRICT	HEALTH PROBLEM/ POPULATION	MEDICAL HEALTH PROVIDERS										
				Grass-root	Commune health station	Hospital central	Private hospital	Private clinics	Traditional medicine worker	PHARMACY	SELF-TREATMENT	OTHERS	NOT SEEKING	
[5]	Indonesia	Papua	Malaria		32.2			37.8			6.1			24.0
[6]	Indonesia	West Java	Fatal illnesses in young children			36.0				42.4				21.6
[7]	Indonesia	Jogjakarta	Tuberculosis			40.8				40.8				11.3
[8]	Uganda	Kampala	Chronic cough		59.6			25.0		0.6	13.5		1.3	
[9]	Pakistan	Islamabad	Students		26.6			73.4						
[10]	Pakistan	Rawalpindi, Islamabad, Abbotabad, Peshawar	General problem		18.4			26.2			39.1		23.5	
[11]	Indonesia	West Java	Rural population		16.6			12.6		5.7	42.9	20.5		
[12]	Pakistan	Karachi	Terminal child illness		14.0			15.0	68.0	3.0				
[13]	Bangladesh	Bangladesh	Childhood acute respiratory tract infections		12.5			24.7		26.3	26.4			10.3
[14]	Ethiopia	Gambella	Sexually transmitted infections			Rank 2*					Rank 1			56.8
[15]	Indonesia	South Sulawesi	Elderly health problem		Rank 1	Rank 3		Rank 2						
[16]	South Africa	Johannesburg	Common infectious		Rank 2	Rank 3		Rank 2	Rank 4	Rank 1			Rank 5	
[17]	China	Hong Kong	Respiratory and gastrointestinal-related infections		Rank 3			Rank 2		Rank 1				
[18]	Guatemala	Chimaltenango, Totonicapán, Suchitepequez, Jalapa	Child illness		Rank 2			Rank 3		Rank 4	Rank 1			

Ref. – reference

\*For publication where no indication of percentage (%) of participant using a provider is found, we ranked the providers in terms of time of contact (ie, first contact will be Rank 1)

People with mild COVID-19 symptoms that in many cases are similar to a common or seasonal cold, do not thinking that they may have been infected with the virus, and may go to these non-official health facilities for medication, increasing the risk of exposure of others while limiting the chance of tracing back to first infection case (F0). They may be long gone before other positive cases infected by them are detected. In addition, people who believed they might have been infected based on their

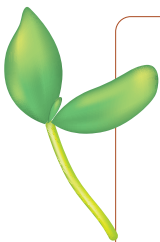


Photo: Rapid COVID-19 testing registration desk in Hanoi (from: Truyền Hình Pháp Luật, via [https://commons.wikimedia.org/wiki/File:Vietnamese\\_registered\\_for\\_rapid\\_testing\\_\(COVID-19\).png](https://commons.wikimedia.org/wiki/File:Vietnamese_registered_for_rapid_testing_(COVID-19).png)).

from pharmacies, traditional health providers, and private/non-official clinics in developing countries is likely to exacerbate such problem.

To effectively detect and control the SAR-COV-2 infection in these resource-scarce settings, thus, would require the active and thorough involvement of health facilities other than hospitals and official health centers, especially in more remote regions where accessibility to official health care is limited. Pharmacies, traditional healers, village health collaborators, private clinics, or mobile independent health workers in the commune should be considered as gatekeepers in a closely connected network of COVID-19 surveillance. Ideally, a well-determined mechanism for timely information sharing between these first contact points and higher-level and specialized taskforces should be established. Staff at these facilities should be trained to detect signs and epidemiological history of suspected COVID-19 cases from or relating to their customers while being provided with sufficient equipment for their own disease protection. These local health gatekeepers can also be effective, community-based, and far-reaching channels in which accurate information regarding COVID-19 knowledge and response can be delivered to the individuals. For example, pharmacists can persuade disease-suspecting customers to visit hospital or testing centers. In addition, due to their proximity to the residency and familiarity with local residents, these facilities would also be points via which intervention packages being delivered to the community, in the unfortunate case of prolonged disease.

One of the examples of how understanding health seeking behavior of population can result in effective strategies for detecting and controlling SARS-COV-2 infections is the case of Vietnam. A low middle income country with health system facing numerous constrains, Vietnam has so far managed to keep the number of SARS-COV-2 confirmed infected cases at 382 and no mortality as of 18 July 2020, through effective utilization of the network of non-official, community-based health facilities and pharmacies, based on the knowledge that majority of the Vietnamese population would prefer going to these local, non-official health workforce when having health problems [20]. We believe that this current success story would further encourage similar resource-scarce settings all over the world to pay more attention to health seeking behaviors of their population and effects of such behaviors on disease management when developing and implementing COVID-19 surveillance and detection measures.



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