

ARMENIA: Increasing preventive screening for non-communicable diseases in Armenia

More people around the world are dying from noncommunicable diseases than ever before. These diseases, which include cancer, chronic respiratory diseases, diabetes, and heart disease, prematurely kill more than 15 million people between ages 30 and 69 each year. Many of these health conditions also make individuals more susceptible to severe forms of other diseases like COVID-19. The largest disease burden of non-communicable diseases is in

Many countries, such as Armenia, have made efforts in recent years to tackle non-communicable diseases by launching mass media campaigns and by equipping medical providers to detect and treat these diseases. Despite these efforts, most people still aren't getting tested. Policymakers are therefore looking for cost-effective approaches to get people to go to the doctor and get screened, and they are teaming up with behavioral scientists to answer key questions, such as: Are people more compelled to get tested if they know how many of their peers have done so? Do they respond to a *personal invitation*? What about a small *financial incentive*?

The World Bank's Strategic Impact Evaluation Fund supported a randomized controlled trial to shed light on these questions. Researchers tested the impact of four approaches: 1) a personal invitation for patients to come in for screening, 2) a personal invitation that also conveyed statistics on how many of the patient's peers have been screened, 3) a personal invitation with a pharmacy voucher labeled as an encouragement to get screened, 4) a personal invitation and a pharmacy voucher that could only be used after the patient went for screening. After five months, people in the control group had very low screening rates: a mere 3.5 percent of people got screened for diabetes and hypertension. The personal invitation increased this rate to about 18.5 percent, with no additional impact from either the unconditional voucher or from the statistics about peers' screening. The pharmacy voucher that was conditional on screening, however, was the most effective, nearly doubling the percentage of people who got screened to 34.7 percent. Since it was more expensive to implement, however, the conditional voucher and the personal invitation alone were equally cost-effective.

Overall, the findings suggest that very simple personalized invitations and conditional financial incentives can lead to more life-saving health screenings in Armenia.

low- and middle-income countries, where 85 percent of related deaths now occur, putting an extra strain on governments' health budgets—and families—due to medical expenditures, productivity losses, disability, and deaths. While early screening can lead to life-saving treatment, screening rates tend to be low and discovery of these diseases thus often occurs too late for effective and efficient treatment.



HEALTH

Context

Non-communicable diseases account for 93 percent of deaths in Armenia, with heart disease the most prevalent of the causes. Since 2010, the government has introduced incentives that reward providers for better performance, including increasing screening rates for hypertension and diabetes. The detection of these two conditions is essential to initiating treatment, achieving disease control, and delaying the onset of other non-communicable diseases. Screening also provides a means for identifying the diseases in people who otherwise appear healthy. Clinical guidelines for these conditions have been developed in Armenia and medical personnel have been trained to conduct screening tests. The government has also launched a national mass media campaign to encourage adults to screen for hypertension and diabetes free of charge in their local primary health care clinic, which continued through the study period.

Despite all these efforts, the rates of early detection of hypertension and diabetes have remained very low. In a nationally representative survey, 1 out of 3 people above the age of 15 had undiagnosed hypertension and less than half in the same age bracket had had their blood pressure measured by a health provider. Similarly, only 24 percent of individuals aged 15 years and above had

their blood glucose levels measured in the past 12 months.

This study targeted adults between the ages of 35 and 68 in Armenia who had not been screened in the preceding year. The baseline data suggests this population was not economically secure: half of participants responded that their income was sufficient for basic family needs, such as food, clothing, and utilities, but not enough for big purchases like a car, while 35 percent responded that their income is sufficient for everyday food but not for clothes and other basic needs. More than half of those in the study were unemployed.

Did you know....

Early detection of diabetes and hypertension delays the onset of other non-communicable diseases, but....

- Only half of the 1.4 billion people living with diabetes have been diagnosed
- 84 percent of undiagnosed cases are in low- and middle-income countries
- Only 39 percent of people with hypertension in these contexts have been diagnosed
- Among them, only 1 in 10 get control of their blood pressure

Evaluation

Researchers designed a randomized controlled trial to measure the impact and the cost-effectiveness of four approaches designed to increase the number of people who got screened for hypertension and diabetes. The approaches were carefully co-designed with senior policymakers in the Armenian Ministry of Health. Researchers also convened focus groups with service users, health care providers, and policymakers in the health sector and used feedback from those discussions to inform the interventions' designs.

To identify potential study participants, the research team used patient records from an e-health database from public health facilities, where 100 percent of the rural population and 85 percent of the urban population is registered for care. From an initial list of 6,934 individuals, researchers randomized people to five groups. After the randomization, potential study participants

were contacted to determine eligibility and to obtain informed consent. A large proportion were not available because they were either out of reach, had the wrong contact information, or could not be located (28 percent); or they were temporarily residing elsewhere (27 percent).

As a result, a total of 2,047 individuals that had been randomly assigned to the different treatment arms were eligible to participate in the study. To assess the willingness of these individuals to participate in the study, fieldworkers contacted them to schedule face-to-face visits until they reached a target sample size of 400 individuals per study group.

Study participants received either 1) a personal invitation from a physician, 2) a personal invitation that included information about screening rates of peers in participant's age group, 3) a

personal invitation with a pharmacy voucher worth 5,000 Armenian drams (about US\$10), described as an encouragement to get screened, and 4) a personal invitation with the pharmacy voucher redeemable only after screening (conditional incentive) or 5) no additional intervention at the time of study (the control group). The personal invitations were delivered in person by the study's fieldworkers and consisted of a verbal message and printed letters signed by a physician, inviting the person to be screened for diabetes and hypertension. The invitations also highlighted that the screening visit was important for the individual's health and the fact that it was free, and included details on how and where to go for screening.

Five months after rolling out the programs, the research team measured whether patients came into a clinic to get screened for diabetes and hypertension, using administrative data from an e-health database. They also conducted a short social and demo-

graphic survey with the study participants between July and September 2019.



Findings

The personal invitation led to a statistically significant and economically meaningful increase in screening.

Without any intervention, only 3.5 percent of participants of the control group went for both screenings during the study period. Patients in the treatment groups, all of whom received the personal invitation (either alone, with information about peers, or with the pharmacy vouchers), screening rates increased by about 15 percentage points (or more than 400 percent).

The peer information and the *unconditional* pharmacy voucher did not augment the impacts of the personal invitation.

The impacts were about the same in the first three treatment groups, regardless of whether people received the personal invitation alone or received it with a voucher or peer information. Specifically, the rates for receiving both screenings were 18.5 percent in group 1 (personal invitation), 18 percent in group 2 (personal invitation with peer group information), and 17.7 percent of participants in group 3 (personal invitation with an unconditional pharmacy voucher).

The personal invitation was most effective when accompanied by a pharmacy voucher that could only be redeemed after screening.

In the fourth group, which received the personal invitation with a conditional pharmacy voucher, 34.3 percent of participants obtained both screenings – nearly 10 times as many as those who were screened in the control group.

While combining the conditional voucher with the personal invitation was by far the most effective, it was also more expensive to implement.

Generally, the costs incurred for the interventions including a voucher were the highest. For the unconditional vouchers, this was because the vouchers were given to all, irrespective of screening status. For the conditional vouchers, this was because fieldworkers verified which participants in the group had satisfied the screening condition and would then receive a voucher, which required more visits and communication with participants.

Nevertheless, the personal invitation alone and the personal invitation with the conditional voucher were equally cost-effective. The unconditional pharmacy voucher was the least cost-effective.

The personal invitation improved screening at a cost of \$62.20 per additional person screened for both diabetes and hypertension. When the invitation was accompanied by a voucher that could only be redeemed after screening, each additional person screened for both tests cost \$64.20. Because it was equally effective as the personal invitation alone but more expensive because it included the cost of the voucher, the unconditional voucher was about twice as expensive per additional person screened (\$127.2).

The statistics about screening among peers may have failed because screening rates were so low and thus didn't effectively "nudge" people to follow their peers, or it may be because of the type of statistics that were shared.

The researchers used absolute numbers instead of percentages because those percentages were relatively low, and they were not sure whether communicating low rates of screenings would be perceived as encouraging. Other studies have conveyed social norms using percentages.

For a peer-effect intervention to work, it's possible that rates need to be relatively high to persuade individuals to follow what their peers are doing.

Conclusion

Overall, this research finds that conditional incentives and personalized invitations can substantially increase screening for diabetes and hypertension for those who haven't been recently screened. Adding a conditional incentive to the personal invitation doubled its effectiveness. The two approaches were equally cost-effective, however. It's likely these interventions would also be effective in other settings where screening rates are low and where people haven't responded to the usual mass communication campaigns to go for preventive health screenings. Importantly, the study also revealed that unconditional incentives – in this case, through a pharmacy voucher labeled as an encouragement for screening – may not be worth the cost

if screening is the main objective. Similarly, showing people statistics on peer screening (at least as designed here) didn't have any additional impact on top of sending out a personal invitation.

When considering scalability, the personal invitations would be relatively straightforward to scale-up, and indeed the Ministry of Health in Armenia will send these invitations to every household in major cities starting in early 2022. Scaling up the highly effective conditional incentive, while more expensive, may well be worth the cost given the enormous financial and health burden of non-communicable diseases. Further research may be needed to evaluate these interventions at scale.

The Strategic Impact Evaluation Fund, part of the World Bank Group, supports and disseminates research evaluating the impact of development projects to help alleviate poverty. **The goal is to collect and build empirical evidence that can help governments and development organizations design and implement the most appropriate and effective policies for better educational, health, and job opportunities for people in low and middle income countries.** For more information about who we are and what we do, go to: <http://www.worldbank.org/sief>.

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