Invitations, incentives and conditions: an RCT of demand-side interventions for health screenings in Armenia

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Armenia has a high burden of NCDs

Non-communicable diseases (NCDs) lead to 93% of deaths in Armenia

In 2017, the economic cost of NCDs was 6.5% of annual GDP
Preventive screenings
early diagnosis = complication and mortality prevention

Supply side
- Financial incentives for doctors
- Training and essential supplies

Demand side
- Mass media campaign

Disease Prevention and Control Project
Despite interventions, gaps in screening uptake persist

Less than 50% of people above 15 years are screened for hypertension annually

Less than 25% in the same group are screened for diabetes annually
Why is demand for preventive care low?

1. High sensitivity of demand to price and convenience:
   Potential large impacts of conditions, financial incentives and reduced “hassle.”

2. Inaccurate beliefs about the benefits and uncertainty over returns:
   Potential large impacts of information.

3. Decisions driven by immediate benefits and costs:
   Time-limited incentives and reduced “hassle” may reduce procrastination.

Focus groups on Armenia:
- Do I have to pay?
- Two visits for diabetes!
- Where?
- Why is this useful?
- Will do this later…

From Dupas and Miguel (2017).
Objective:

To examine the impact of incentives, invitations, and conditions, on screening rates for hypertension and diabetes, among adults aged 35 to 68, who had not been screened in the past year.
<table>
<thead>
<tr>
<th>Intervention group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Personal invitation from physician for diabetes and hypertension screening</td>
</tr>
<tr>
<td>2</td>
<td><strong>Intervention group 1 plus</strong> information on screening among peers</td>
</tr>
<tr>
<td>3</td>
<td><strong>Intervention group 1 plus</strong> labelled pharmacy voucher incentive (AMD5000 or ~$10), not conditional on being screened</td>
</tr>
<tr>
<td>4</td>
<td><strong>Intervention group 1 plus</strong> pharmacy voucher incentive (AMD5000 or ~$10), conditional on being screened</td>
</tr>
<tr>
<td>Control group</td>
<td>No personal invitation for screening or voucher but exposed to national campaign</td>
</tr>
</tbody>
</table>

**Dear [Name, Surname],**

We cordially invite you to visit [Name of the medical facility] of [Name of the community] at the following address [Address] to be screened for diabetes and hypertension.

According to official records in your personal medical card, in past 12 months you have not been screened for diabetes and hypertension at a medical facility. In terms of prevention and control of diseases, your visit to the medical facility is extremely important to ensure your personal healthcare.

Please, prior to the visit make a call to your doctor for a proper appointment, using the telephone number presented in the bottom of this invitation.

**Note:** for a credible measurement of diabetes you must visit the doctor fasting since midnight, which means you should not eat or drink anything except water. The screening is free-of-charge, painless and not time-consuming.

We highly recommend that you visit the medical facility soonest possible and to use the free-of-charge medical services of the primary healthcare facility.

Looking forward to seeing you,

[Signature]

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**Intervention group 1:** screening is important; signed by doctor; not time-consuming, painless and free; location of clinic; scheduling; pre-screen preparation.
Randomly selected 35 to 68 years old patients from the e-health database in 4 provinces, who did not screen for hypertension and diabetes in the previous year.

Random pre-assignment to study groups.

Allocated to Group 1
n = 1314

Allocated to Group 2
n = 1318

Allocated to Group 3
n = 1230

Allocated to Group 4
n = 1332

Allocated to Control Group
n = 1740

Contacted by phone, excluded (n = 4887)
- Out of reach (n = 1966)
- Out of the community (n = 1893)
- Screened at pre-selected HF (n = 386)
- Screened at another HF (n = 255)
- Refuse to talk (n = 251)
- Will leave for 6 months (n = 77)
- Member of the same HH (n = 39)
- Dead (n = 18)
- Duplicated ID (n = 1)
- Wrong age group (n = 1)

Reached by phone and eligible
n = 2047

Final study groups according to random pre-assignment
n = 2000

Excluded (n = 47)
- Did not grant consent (n = 31)
- Temporarily out of reach (n = 8)
- Out of community (n = 3)
- Not contacted (n = 5)

Intervention Group 1
n = 400

Intervention Group 2
n = 400

Intervention Group 3
n = 400

Intervention Group 4
n = 400

Control Group
n = 400
# Baseline balance

<table>
<thead>
<tr>
<th>Variable (of 24)</th>
<th>Sample</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.5 (0.5)</td>
<td>0.5 (0.5)</td>
<td>0.5 (0.5)</td>
<td>0.5 (0.5)</td>
<td>0.5 (0.5)</td>
<td>0.5 (0.5)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>51 (9.6)</td>
<td>51 (9.6)</td>
<td>51 (9.8)</td>
<td>50 (9.5)</td>
<td>51 (9.8)</td>
<td>51 (9.3)</td>
</tr>
<tr>
<td>Married</td>
<td>0.9 (0.3)</td>
<td>0.8 (0.4)</td>
<td>0.9 (0.4)</td>
<td>0.9 (0.3)</td>
<td>0.9 (0.3)</td>
<td>0.9 (0.3)</td>
</tr>
<tr>
<td>Higher education</td>
<td>0.2 (0.4)</td>
<td>0.1 (0.3)</td>
<td>0.2 (0.4)</td>
<td>0.2 (0.4)</td>
<td>0.2 (0.4)</td>
<td>0.2 (0.4)</td>
</tr>
<tr>
<td>Subjective welfare*</td>
<td>0.5 (0.5)</td>
<td>0.4 (0.5)</td>
<td>0.5 (0.5)</td>
<td>0.6 (0.5)</td>
<td>0.5 (0.5)</td>
<td>0.6 (0.5)</td>
</tr>
<tr>
<td>Household size</td>
<td>4.6 (3.0)</td>
<td>4.6 (2.0)</td>
<td>4.7 (5.1)</td>
<td>4.6 (1.8)</td>
<td>4.6 (2.0)</td>
<td>4.6 (2.1)</td>
</tr>
<tr>
<td>Private sector employee</td>
<td>0.2 (0.4)</td>
<td>0.2 (0.4)</td>
<td>0.2 (0.4)</td>
<td>0.2 (0.4)</td>
<td>0.2 (0.4)</td>
<td>0.2 (0.4)</td>
</tr>
<tr>
<td>Small PHC (pop. &lt; 920)</td>
<td>0.1 (0.3)</td>
<td>0.1 (0.3)</td>
<td>0.1 (0.3)</td>
<td>0.1 (0.3)</td>
<td>0.1 (0.3)</td>
<td>0.1 (0.3)</td>
</tr>
<tr>
<td>Urban PHC</td>
<td>0.5 (0.5)</td>
<td>0.5 (0.5)</td>
<td>0.5 (0.5)</td>
<td>0.5 (0.5)</td>
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</tr>
</tbody>
</table>

Sample means with standard deviations in parentheses

*Our income is sufficient for family basic needs, such as food, clothing, but not enough for big purchases, such as equipment or a car
Impact on screening for hypertension and diabetes

From a baseline of no screening, in 6 months …

Comparison: 3.5%
Invitation Only: 18.5%
Invitation + Infographics: 18.0%
Invitation + Non-Conditional Voucher: 17.7%
Invitation + Conditional Voucher: 34.3%

Note: OLS regressions controlling for facility and regional fixed effects, age, gender, and other sociodemographic variables
Average cost per person screened (USD)

- Invitation Only: $64.15
- Invitation + Infographics: $63.87
- Invitation + Non-Conditional Voucher: $127.18
- Invitation + Conditional Voucher: $62.24
Limitations

Control group not surveyed at baseline
- Surveyed at endline
- Information at baseline may have influenced participants
- Stable socio-demographic variables
- Survey + intervention effect
- Potentially overestimating impact

Intervention-control differences
- Differences in post-allocation attrition
- Baseline differences on covariates
- Controlled for in regressions
Takeaways

Messages, incentives, and conditions increase screening potentially due to reduced hassle, changed beliefs, time limit, immediate benefits and costs? [TBD]

Messages and conditional incentives were equally cost effective, unconditional incentives less so, because Group 3 was twice as costly as Groups 1 and 2, but equally effective.

Personalized messages to households included under the Project, but unclear if impacts are generalizable to those who have screened before and with a different implementer.
Acknowledgments

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