Quality Signals and Provider Choice in the Market for Primary Care: Pre-analysis plan

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Abstract

In settings where quality of services may be difficult to judge by consumers, such as healthcare markets, it is a widely held belief that giving information about provider quality may support and improve the responsiveness of demand, and therefore the allocative efficiency of the market. Yet there is hardly any evidence of responsiveness of the demand to information and quality in healthcare markets in low- and middle-income settings. This project will provide experimental evidence on whether provider choice is responsive to quality signals. To test this, we will provide information on quality of providers to caregivers who have free access to a small network of private providers for their children's care and observe their choice of providers. Intermediate outcomes measured will include beliefs about providers' quality and measures of the importance of care quality as a provider attribute.

1 Introduction

In many low- and middle-income countries (LMICs), health policy reforms have focused on reducing user fees as barriers to healthcare access. This has led to the expansion of national and social health insurance schemes aimed at lowering out-of-pocket payments and increasing service utilization. However, while removing financial barriers can raise healthcare use, the ultimate impact on population health depends critically on the quality of care that is accessed. When care quality is low, increased utilization may yield little health benefit—simply amplifying the inefficient consumption of low-value services (Das and Do 2023).

Quality is often heterogeneous across providers, and the extent to which users can identify and seek care from high-quality providers will shape the health and welfare effects of financing reforms. However, healthcare markets are characterized by significant information asymmetries (Arrow 1978). Since medical care is a credence good, patients may not be able to determine its quality, either before or after use (Dulleck and Kerschbamer 2006). In many LMICs primary care can be poor and users typically lack reliable information about provider quality, particularly in the private sector (Kruk et al. 2018). As a result, users may base their choices on easily observable factors such as proximity, price, or amenities, which may be uncorrelated to actual technical quality (Das et al. 2018).

Giving users information about provider quality can influence healthcare choice through two mechanisms. First, if users trust the information, it may lead them to update prior misperceptions about provider quality. Second, quality signals may change user's preferences, by increasing the salience of provider quality as a decision-making criterion, prompting users to prioritize it over other factors such as proximity or familiarity (Bordalo et al. 2013; 2022). These belief and preference-based mechanisms are expected to increase demand for high-quality providers in the short term, and—by making quality more relevant in patient choices—create incentives for providers to compete on quality in the longer term, ultimately improving health outcomes. This logic underpins quality disclosure policies in high-income health systems, such as the UK's NHS, where the public reporting of GP performance has been shown to shift demand and reduce socio-economic inequalities in provider choice (Santos et al. 2017; Brown et al. 2023). Yet we know little about whether similar interventions are effective in low-resource settings with mixed public-

private provision, where baseline information is weaker and constraints to acting on it may be more severe.

This study will address this gap by implementing a field experiment that tests whether providing information on the quality of care offered by private primary care providers influences users' provider choices in urban South Africa. Specifically, we test the hypothesis that access to quality information increases the likelihood that individuals choose higher-quality providers. To evaluate this, we conduct a cluster-randomized trial in a low-income urban area of South Africa, in which households are randomly assigned to receive information about the best private primary care providers available to them for free. We also assess whether the intervention improves users' perceptions of provider quality and shifts their preferences toward quality-related attributes in provider selection.

2   Study setting

The study takes place in urban South Africa, where the health system remains highly segmented. A well-resourced private sector, funded largely through private insurance, serves the wealthiest 10–15% of the population, while the remaining 85% depend on an overstretched public sector offering free but often under-resourced care (McIntyre and Ataguba 2017). To address this inequity, the government has proposed the creation of a National Health Insurance (NHI) scheme aimed at centralizing healthcare financing, eliminating out-of-pocket payments, and expanding access to private providers for all citizens (NDoH 2015). Under the NHI, private general practitioners (GPs) would be contracted into the publicly funded system and reimbursed via capitation, allowing individuals to access private care without direct payments. (NDoH 2021).

The success of this reform depends partly on individuals' ability to make informed choices. If choice of which GP to register with is to be voluntary, at present, there is limited public information on the quality of providers on which such decisions can be made. In the absence of standardized quality reporting or accreditation, patients may continue to rely on informal signals such as reputation, proximity, or peer recommendations—factors that may not reflect actual quality of care. Ensuring that users have access to credible, comprehensible quality information will be aid

the NHI in achieving its goal of improving equity and health outcomes – if such information does in fact impact their choice of providers.

This study takes place in Soweto, a former township, where the large majority of the population relies on public clinics for services and a minority access care from private providers. For primary care, the market we consider here, Soweto includes approximately 30 public clinics and 100 private GPs, serving a population at nearly 2 million inhabitants. In the companion study to this one, we found that 93% of patients were seeking care from public clinics. As such, Soweto offers a good setting to investigate the broader health system organization challenges faced in South Africa.

3 Study design

3.1 Participants and recruitment

This study builds on a previous field experiment,[1] where two thirds of participants (n = xx) were randomized to a treatment arm given them free access to a network of private primary care providers for their child for 3 months. At the end of this trial, an endline survey was conducted and all treated individuals were invited to take part in a follow-on study.

3.2 Experimental design

To identify the effects of providing information on healthcare seeking, individuals continued to be given free access to private primary care and some were given information about the quality of providers. To address concerns of information spillovers between neighboring households, access to information is not randomized at the individual level, but at the cluster-level, with clusters constructed from groups of 4-5 neighboring households. This intervention was run for a period of two months, and ran between June and August 2024.

Each cluster was randomly assigned to one of two arms:

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[1] Blaauw, Duane, Mylene Lagarde and Nicholas Stacey. 2024. "Randomising access to quality care in South Africa." AEA RCT Registry. May 13. https://doi.org/10.1257/rct.13554-1.0

1. <u>Control group</u>: caregivers given free access to a small network of private providers for two months for a child in their care.

2. <u>Information group</u>: in addition to the same access to private providers, households receive information about the identity of the two best providers in their network.

Information on quality is based on findings from a standardized patient audit study that measured providers' care quality over a series of cases. Three measures of quality were derived: process quality (history taking, physical examination) and effectiveness of care (where the provider correctly managed the patient). These measures are used to derive a composite index of quality allowing us to rank providers in a network. At the start of the trial, treated households then receive a list that indicates with a star symbol the top two providers in their network, as well as a brief explanation of what the star indicates.

Figure 1 Hypothetical example of provider list with quality signal

Provider Name (Alphabetical)	Category	Suburb	Street address	Telephone
Dr. Thandi Mokoena	Doctor Clinic	Orlando West	128 Vilakazi Street, Orlando West, Soweto, 1804	0712345678
Dr. Sipho Dlamini	Doctor Clinic	Pimville Zone 5	45 Mofokeng Crescent, Pimville Zone 5, Soweto, 1808	0824567890
Dr. Ayesha Patel	Doctor Clinic	Diepkloof Zone 2	301 Ndlovu Street, Diepkloof Zone 2, Soweto, 1864	0609876543
⭐ Dr. Nomvula Khumalo	Doctor Clinic	Jabulani	17 Tsietsi Mashinini Avenue, Jabulani, Soweto, 1868	0833217654
Ubuntu Wellness Clinic	Nurse Clinic	Meadowlands Zone 4	212 Bapela Street, Meadowlands Zone 4, Soweto, 1852	0725551234
Dr. Yusuf Abrahams	Doctor Clinic	Dube	89 Hlatswayo Drive, Dube, Soweto, 1801	0749998888
Dr. David Goldstein	Doctor Clinic	Zola North	66 Molefe Street, Zola North, Soweto, 1866	0612468100
⭐ Dr. Lerato Molefe	Doctor Clinic	Chiawelo Extension 2	350 Lekope Street, Naledi, Soweto, 1861	0793332211
Imani Care Centre	Nurse Clinic	Orlando West	350 Lekope Street, Naledi, Soweto, 1861	0847776666

4 Data and outcomes

4.1 Data sources

Data are obtained from 3 sources:

1. <u>Baseline/recruitment survey:</u> Upon enrollment in the initial (companion) study, caregivers completed a baseline survey that captured demographic information on the caregiver and the

child who has free access to care, as well as beliefs about quality of providers and prior healthcare use of private care.

2. <u>Provider Reimbursement data:</u> For all visits to private providers empaneled in the study, we obtain detailed records through reimbursement claims. These data cover a period beginning three months before the start of the intervention and continuing through the study period.

3. <u>Endline survey:</u> At the end of the study, participants complete a follow-up survey assessing their attitudes toward primary care providers. This includes perceptions of quality for both "star-rated" and non-rated providers, as well as the relative importance they assign to different provider attributes.

4.2 Outcomes

4.2.1 Primary outcomes

The primary outcome is whether the caregiver visited a provider identified as offering high quality care ("star provider"). This will be measured using provider reimbursement data, which capture all visits made by caregivers to empaneled providers. *We will construct a binary indicator equal to one if the caregiver made at least one visit to a star providers during the study period, and 0 otherwise.*

4.2.2 Secondary outcomes

To explore the mechanisms through which quality signals may influence provider choice, we define a set of secondary outcomes focused on two potential channels:

(i)   changes in perceptions of the quality of care of star providers, and

(ii)   increased importance of care quality as a provider attribute.

4.2.2.1   Perceptions of star provider quality

The effectiveness of quality signals in shifting provider choice may depend on whether the signal successfully updates caregivers' beliefs about the quality of care at star-rated providers. To assess this, we include a set of secondary outcomes capturing caregivers' perceptions of provider quality.

At endline, respondents are asked to rate both (a) private providers in their network in general and (b) specific star providers in their network, across four quality-related dimensions:[2] (1) average waiting time, (2) likelihood of receiving a physical examination, (3) likelihood of receiving the correct treatment, and (4) likelihood of encountering rude or disrespectful behaviour at the provider. *For each respondent and each quality dimension, we will construct a composite index of the difference in perceived quality as the sum of the difference in perceived in quality between a star provider and the rest of the private providers.*

Comparing this difference between control and treatment groups will allow us to assess whether quality signals led to meaningful updates in beliefs.

4.2.2.2 Importance of care quality as a provider attribute:

While the previous measures will reveal whether the quality signal updated beliefs about specific providers, we also examine whether it increased the *importance* of quality as a key attribute in provider selection. At endline caregivers are asked to rank our attributes in order of importance when selecting a provider for their child: (i) waiting times, (ii) availability of medicines, (iii) friendliness of the doctor, and (iv) quality of care (receiving correct treatment and guidance). *We will construct a binary* indicator equal to 1 if the caregiver ranks *quality of care as the most important attribute, and 0 otherwise.*

5 Empirical Approach

5.1 Balance checks

After randomization, balance will be assessing by regressing baseline variables on treatment indicators. For each baseline variable we will fit and report a regression of the following form:

$$x_{ic} = \alpha_0 + \beta_1 Treatment_c + \gamma_{ic} \tag{1}$$

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[2] For example, to measure perceptions of waiting times, caregivers are asked: "Based on your experience or what you have heard, how long do you think patients usually have to wait before their consultation in the PRIVATE PRACTICES ON THIS LIST? " ; Based on your experience or what you have heard, how long do patients wait...AT THE PRACTICE of [Star provider name]?"

where i indexes caregivers, c indexes the household group, x_{ic} is the baseline variable of interest, $Treatment_c$ is an indicator for the quality signals treatment, and γ_{ic} is an idiosyncratic error term. Standard errors will be clustered at the level of the household group.

We will evaluate balance with respect to the following characteristics:
1. <u>Child characteristics</u>: Age, gender,
2. <u>Caregiver characteristics</u>: Age, gender, employment status, educational attainment (matric completion),
3. <u>Household characteristics</u>: Household asset index, household size
4. <u>Pre-intervention health and care-seeking</u>: Any illness spell pre-intervention, number of illness spells pre-intervention, used any network provider pre-intervention, used star provider pre-intervention, Near or far provider network.

5.2 Main analysis

For our main analysis, we will investigate the effect of quality signals treatment on primary outcomes (use of star providers) and secondary outcomes (beliefs about provider quality & importance of care quality as provider attribute) by means of two OLS regressions: the first, a simple differences-in-means estimator

$$y_{ic} = \beta_0 + \beta_1 Treatment_c + \epsilon_{ic} \qquad (2)$$

and the second, will adjust for covariates:

$$y_{ic} = \beta_0 + \beta_1 Treatment_c + \beta_2' X_{ic} + \epsilon_{ic} \qquad (2)$$

In these specifications i indexes caregivers, c indexes the household group, y_{ic} is the outcome variable, $Treatment_c$ is an indicator for the quality signals treatment, X_{ic} are control covariates and ϵ_{ic} is an idiosyncratic error term. Standard errors will be clustered at the level of the household group. Controls will include any imbalanced baseline covariates and others selected by means of the double-selection LASSO approach (Belloni et al. 2014).

5.3 Heterogeneity analysis

We will examine heterogeneity in the effect of receiving quality information by estimating extended versions of our main specification that include interaction terms for sub-group characteristics Specifically, we will estimate regressions of the following form:

$$y_{ic} = \beta_0 + \beta_1 Treatment_c \times Group_{ic} + \beta_2 Treatment_c + \beta_3 Group_{ic} + \beta_4' X_{ic} + \epsilon_{ic} \qquad (3)$$

where $Group_{ic}$ is an indicator for membership in the sub-group of interest. We will investigate heterogeneity in effect across the following sub-groups:

- Whether nearest provider is a star provider: Caregivers will have been randomly assigned to a network offering either close or far providers. For those assigned to the further network, utilization of the star providers may impose higher indirect costs which may limit the effect of the quality information.

- Any pre-intervention use of a star provider: in the pre-study period, caregivers may already have used a star provider. If that is the case, they may be more likely to use them again, once as the information would confirm a pre-existing preference (conversely, those who chose a different provider before may prioritize relational continuity over quality).

- Caregiver education: More educated caregivers may be more able to understand and interpret and therefore act on the information signal. More educated caregivers will be defined as those who have completed matric, the school leaving qualification in South Africa.

- Caregiver age: Younger caregivers may be more able to interpret and act on the information signal than older caregivers, who may rely on habits and shortcuts more. Younger caregivers will be defined as those who are less than 50 years of age.

- Child's age: caregivers may be more responsive to quality for younger children as they might perceive their problems as more serious or urgent. Younger children will be defined as those aged less than 2y at baseline.

5.4 Robustness checks

5.4.1 Attrition

Attrition will be defined as those who consent to participation but do not complete the endline survey for any reason. Should we find attrition to be non-random and correlated with treatment status, we will use Lee bounds to bound the effects of the intervention (Lee 2009).

5.4.2 Ease of use and credibility of information among treatment group

If the provision of the quality signal does not induce choice of a higher quality provider, this may be due to the caregivers' lack of use or inability to use the starred provider list. To investigate whether this arises, for those in the treatment group we will analyze questions at endline regarding their use and understanding of the quality information. These are:

- On a scale of 0 to 10, How easy is it to understand the information about doctor quality on the list? (where 0= extremely hard to understand and 10= extremely easy to understand)
- On a scale of 0 to 10, how much do you believe that these 2 doctors are actually better than the others? (where 0= you do not believe it at all and 10= you completely believe it)

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