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Discrimination in healthcare: A field experiment with Pakistan's transgender community☆

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ABSTRACT

Transgender individuals face high levels of discrimination and bias. However, it is not clear how such biases result in different levels of care. Using an in-person audit-study, we randomize cisgender male and transgender standardized patient visits to low-cost private clinics in Pakistan. We detail out the entire process of obtaining healthcare. Results show that transgender patients are treated differently, but consistent with preservation of dignity. Physicians substitute in procedures that require less physical contact; are less likely to ask culturally sensitive questions; and are more likely to recommend different treatment plans. These practices yield lower quality of care, though they do not stem from overtly discriminatory practices. It is important to note two caveats. We work with a small sample and therefore our results are not always precise enough to be informative. Further, without cisgender female patients, our results are not always informative about discriminatory practices against transgender patients.

I will remember that there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug.

– Hippocratic Oath – Modern version

1. Introduction

Upon graduation, physicians worldwide take an oath of ethics (often called the "Hippocratic Oath"), which sets the standards of care that healthcare professionals must provide to all patients. For example, the first three statements in the declaration of a new doctor at the University of Exeter, asks physicians to (i) pledge service to humanity; (ii) care for

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all patients equally; and (iii) respect autonomy and dignity of patients.[1] In this paper, we ask whether certain types of patients (specifically, transgender patients -*Khwaja sira*[2]- in Pakistan) are treated differently in direct contradiction to the second statement of the oath.[3] Using an in-person audit-study approach (as defined by Gaddis, 2018), we randomize cisgender male or transgender standardized patient visits to low-cost private clinics in a large urban setting in Pakistan (Lahore).[4] We detail out the process of obtaining healthcare, by observing all aspects of the physician-patient interaction. Our results show that transgender patients are indeed treated differently, yielding differences in patient treatment plans. However, we find that the differences in transgender treatment stem from cultural factors that are indeed consistent with the preservation of patient autonomy and dignity (the third statement of the oath). Hence, we demonstrate the complexities inherent in obtaining healthcare for marginalized populations, particularly in a developing country context.

We are primarily focussed on determining if (and how) healthcare professionals (physicians), those that have sworn an oath to provide the best possible care to all, provide differential treatment to patients with identical health concerns, but different gender identities. By doing so, we join the nascent literature on the behaviour of professionals (see for example, Cardenas and Sethi, 2010; Kahan et al., 2015; Spamann and Klohn, 2016; Hanna and Wang, 2017; Banuri et al., 2019; among others). We present the results of a novel exploratory in-person audit study of low-cost private health clinics in a developing country (Pakistan), with transgender and cisgender male standardized patients. Our data comes from the population of 36 low-cost private clinics in two major low-income neighbourhoods in Lahore, Pakistan.[5] Each clinic is visited twice, once by a cisgender male patient and once by a transgender patient (where the order is randomly assigned). We use trained stage actors to ensure consistent delivery, and we use two actors for each gender (so a total of four actors altogether) who are then randomly assigned to clinics. We utilize a standardized patient protocol, modifying the vignette developed by Das et al. (2016), whereby actors present with fictitious symptoms, consistent with asthma, and we document the entire process of visits to health clinics. We record physician behaviour in three broad areas: verbal interactions (e.g., demeanour and obtaining patient history), physical interaction (e.g., examinations), and follow-ups (e.g., diagnostics, advise). As the first study of this nature, our primary goal is to document differences in patient experience and treatment by healthcare providers. We note that while there exists considerable anecdotal evidence on differential treatment of transgender individuals all over the world, there is a dearth of systemic evidence on this topic, especially in developing countries.

Our results, despite of our small sample and adjustments for multiple hypotheses, document differences in patient experience between cisgender male and transgender patients. Surprisingly, the results are consistent with healthcare professionals being more sensitive to the needs of transgender patients, not less. Transgender patients are more likely to be greeted with respectful pronouns ($p < 0.05$), and more likely to have auscultations checked from the back ($p < 0.05$), rather than the chest ($p < 0.01$). At the same time, we also find that physical examinations are less likely to be carried out, particularly when checking blood pressure ($p < 0.10$), which is consistent with healthcare professionals less inclined to touch transgender patients (consistent with transgender experiences documented by Dutta et al., 2019). Furthermore, we find that healthcare professionals are less likely to take patient history from transgender patients, particularly on perceived sensitive questions such as occupation ($p<0.01$) and family history ($p<0.01$). Healthcare professionals are also less likely to ask about length of breathing difficulty episodes ($p<0.05$) and incidence of chest pains ($p < 0.10$). These questions, according to the British Thoracic Society Scottish Intercollegiate Guidelines Network, SIGN 2019, are critical to the diagnosis of asthma.

Ultimately, healthcare professionals prescribe transgender patients with different treatments: transgender patients are less likely to be provided any medicines (either prescribed or dispensed, $p < 0.10$). Conditional on medicines being provided, transgender patients are more likely to be offered an unnecessary injection ($p < 0.05$)[6]; more likely to be dispensed cough medicines ($p < 0.01$) and more likely to be prescribed antibiotics ($p < 0.05$). While data on transgender experiences in Pakistan is limited, our results compliment findings from survey data from developed countries.

What is particularly striking here is that, even though healthcare providers are not evidenced as treating transgender patients poorly (indeed, their actions display sensitivities to the needs of this population), they are treating them differently, which is yielding different outcomes in terms of prescribed treatments. To our knowledge, we are the first to use an in-person audit study focusing on the transgender experience in healthcare, specifically the behaviour of healthcare professionals when dealing with transgender patients. In this respect, this paper joins the literature focusing on in-person audit and correspondence studies. These techniques allow more control over confounds and allow for establishing causation (Bertrand and Duflo, 2017). The use of this methodology allows us to document, for the first time, differences in patient treatment by healthcare providers for transgender individuals (relative to the cisgender male benchmark), and (in particular) the potential process leading to poor health outcomes in marginalized populations.

While there are certainly limitations (detailed below), our study illustrates the strength of in-person audit studies to address questions of discrimination, first by providing a wide variety of outcomes that are introduced to the literature on discrimination against transgender individuals, and (second) that our detailed data collection procedures allow for defence against experimenter demand effects by testing for consistency across responses in patient perceptions and data on physician-patient interactions.[7] The literature on discrimination in healthcare tends to rely on self-reported measures or surveys, which are prone to bias (for example, Bockting et al., 2013; Grant et al., 2011; Hendricks and Testa, 2012; Tebbe ad Moradi, 2016). Our intention was to construct a revealed preference measure of the patient experience. For this reason, our design departs from the design choices made in many audit studies.

We note that our study has two major limitations. The first is that we have a small sample of clinics (32 clinics in total), which are the population of the two low-income neighbourhoods that we study but are not

[1] Full statement here: https://www.exeter.ac.uk/students/graduation/bmbs/hippocraticoath/

[2] The correct local term for our transgender actors is *Khwaja sira,* whose closest western analogue would be transwomen. Details are provided in Section 2.1.

[3] See Pakistan's medical graduate oath: http://jsmu.edu.pk/assets/docs/updates/news/20181218%20OATH%20CONVOCATION%20FOR%20MBBS.PDF

[4] The transgender community has a long history in South Asia (detailed in the next section), but critically, are visually identifiable. This makes the patient manipulation salient for healthcare professionals in our context, which may not be the case in other contexts (and hence transgender individuals may need to verbally self-identify, making the study challenging to conduct). Furthermore, unlike many audit studies that focus on simple transactions (such as getting a job, obtaining a free bus ride, setting up a medical appointment), our interaction is complex.

[5] Lahore is Pakistan's second largest city with an estimated population in 2017 of 11.13 million (Pakistan Bureau of Statistics, 2017). We visited two major neighborhoods of Walton and Dharamphura. The clinics were all general private clinics operating in these neighborhoods.

[6] Given the set of symptoms our patients present, injections are medically unnecessary. This is in line with past findings, Altaf et al. (2006) note that 94.2 % of injections used in Pakistan are for therapeutic use and are unnecessary.

[7] We are grateful to an anonymous referee for these additional points.

representative of clinics in the wider Lahore area, or Pakistan in general. Furthermore, we conduct two visits per clinic, mainly due to budgetary reasons, as our detailed protocol comes with high marginal costs, but allows for more detailed inference. This naturally limits our statistical ability to detect meaningful treatment differences between cisgender male and transgender patients. We note, however, that it is not unusual for in-person audit studies to have small samples given the complexity of data collection.[8] The second limitation is that we do not include cisgender female patients in our study. We made this design choice because we were interested in documenting differences in treatment between transgender patients and the gender that we expected to have the highest quality care (in a patriarchal society like Pakistan, but also in many others, this would naturally be cisgender males). It could be the case that cisgender females are treated differently from cisgender males, and the behaviour of the physicians with transgender patients may be consistent with the treatment of cisgender females. This is an interesting question, though out of scope of our current study. Differential treatment across cisgenders might explain some of the differences that we observe (for example, auscultations taken from the back rather than the chest), but not for others (for example, differences in verbal examinations such as family history and occupation).

In what follows, Section 2 provides details on our context: both the local healthcare system and the transgender experience in Pakistan have features that distinguish them from their counterparts in western societies. Section 3 provides details on the design of our in-person audit study, while also highlighting caveats to our design, and how we adjust for them. Section 4 presents our results. In Section 5, we conclude by highlighting the urgent need for more research on transgender rights and access to basic services.

2. Context

Despite recent progress, transgender individuals continue to face significant discrimination which negatively impacts their socioeconomic status (Hughto et al., 2015; James et al., 2016).[9] In healthcare, the US Transgender Survey (2015) reports that at least a third of respondents reported having at least one negative experience with a healthcare provider in the preceding year, with about 23 % not seeking help because of discrimination. Similarly, the EU's Agency for Fundamental Rights (2014) reports that about 22 % of transgender respondents reported being discriminated against by healthcare providers.[10]

Beyond physical health, in more developed countries, transgender individuals face high levels of discrimination in many respects including access to employment (Badgett et al., 2020), income (Russomanno et al., 2019), insurance (Carpenter et al., 2020), and even access to mental health (Button et al., 2020). However, there is a dearth of literature detailing the transgender experience. Furthermore, while more data exists for the transgender experience in western nations, it (nearly) exclusively relies on survey methodologies.[11]

2.1. Transgender individuals (Khawaja sira) in Pakistan

South Asian countries have a storied history with transgender communities. In 2009, the Pakistan Supreme Court officially recognised transgender as the *third gender,* granting the country's transgender individuals both recognition and rights under the constitution (Redding, 2016). These legal protections codify cultural norms in the region, which have historically recognised a distinct third gender for centuries. However, despite their socio-cultural recognition and the spate of recent policy initiatives, transgender individuals face discrimination due to their non-conformity with traditional gender norms; discrimination that is persistent and present in all aspects of life, including access to basic healthcare (Khan, 2014; Saeed et al., 2018). While recognition of a civic identity for the transgender population is a landmark achievement, Ming et al. (2016) argue that persistent lack of anti-discrimination laws yield inequality in access to healthcare for the transgender population, even amidst calls to improve transgender health (Winter et al., 2016).[12]

While no firm definition exists, *Khawaja sira* can be interpreted as an umbrella term that includes individuals that are intersex, transwoman (*zanana)* or eunuchs (*hijra)* (Khan 2014).[13] Khan (2014) documents that the defining characteristic of a *Khawaja sira* is her feminine spirit, which drives her to a more feminine gender role. Under traditional gender binarism then, the *Khawaja sira*, especially the *hijra* and *zanana* could be classified as individuals who are assigned male at birth but identify as women, and either undergo castration (*hijra)* or not (*zanana)*. However, as aforementioned, such a classification would be too simplistic. While more effeminate, a *Khawaja sira* occupies a social role distinct from men and women, and resist categorisation as either men or women.

Due to their non-conformity to stereotypical gender roles, the transgender community faces significant discrimination and abuse that may start in early childhood and continue throughout their life (Alizai et al., 2017). As a result, they live in tight-knight *guru-chela* (leader--disciple) households and isolate themselves from the rest of society. The guru "adopts" transgender children either at the time of birth, when they begin exhibiting feminine characteristics, or once they run away from abuse from family members (de Lind van Wijngaarden et al., 2013). Hence, asking questions about family history may well be considered insensitive by this community, given that many transgender children willingly or are forced to abandon their families (Abdullah et al., al., 2012). These social exclusions, coupled with lack of occupational and educational opportunities push transgender individuals into professions like prostitution. Dutta et al. (2019) note that transgender individuals in South Asia face significant institutional discrimination, including healthcare professionals refusing to touch or administer physical examinations, yielding differences in medication prescriptions. Interviews with transgender individuals in India find that private medical facilities (such as the ones that we study) are more tolerant than public sector healthcare institutions (Dutta et al., 2019). For Pakistan's transgender

[8] Given the challenges in conducting in-person audit studies that are more involved, it is perhaps unsurprising that other studies have the same small sample limitations as we do. For example, Neumark et al. (1996) conduct an audit study with 65 restaurants in Philadelphia to study discrimination in hiring practices. Pager (2003) studies the impact of race and criminal history by using four testers across 350 employers, though their study involved in-person submission of job applications, but not necessarily in-person meaningful interactions with employers (our actors were instructed to always complete the doctor visit). Similarly, Pager, Bonikowski and Western (2009) conduct an in-person audit study with 10 testers and 171 job applications (and a follow up experiment with 169 job applications).

[9] For more information on the history of anti-LGBTQ+ laws in former British colonies, please see: https://www.bbc.co.uk/news/world-asia-57606847

[10] These negative experiences may be attributed to the healthcare providers inability to communicate, build relationships, their lack of knowledge, or systematic weaknesses in the healthcare system. See Heng, et. al (2018) for a detailed review.

[11] See Button et al. (2020) for an important exception.

[12] In May 2018, just after our data collection, Pakistan enacted the Transgender Persons (Protection of Rights) Act, which prohibits discrimination on the basis of gender identity in a number of domains, including healthcare (more here: https://www.icj.org/wp-content/uploads/2020/03/Pakistan-Transgender-Advocacy-Analysis-brief-2020-ENG.pdf). However, some have argued that enforcement continues to be low, calling for additional laws to protect transgender individuals (more here: https://www.pinknews.co.uk/2020/09/17/pakistan-trans-historic-bill-protection-violence-punjab/)

[13] While to our knowledge, no empirical study exists on the distribution of the subcategories of *Khawaja siras*, Khan (2014) states that it is widely believed in the *Khawaja sira* community that the vast majority of *Khawaja sira* are *zanana* (transwomen), i.e. those who are biologically male but identify as *Khawaja sira* and have not undergone any medical procedure.

population, approximately 70 % seek healthcare from the public sector, and 82 % reported discrimination by a healthcare provider (Manzoor et al., 2022).

In the context of our study, it is important to note that we focus on the *Khawaja sira* community, which is a subset of transgender individuals in Pakistan. Importantly, the *Khawaja sira* reveal their identity, through both appearance and personality traits that are in line with their well-defined role. The community continues to face discrimination despite recent advances in the legislative framework.

2.2. Private low-cost health clinics

Pakistan's healthcare system typically ranks towards the bottom of the global distribution in healthcare provision and outcomes. According to the 2021 Legatum Prosperity Index, Pakistan ranks 138th in the world in overall prosperity, and 130th (out of 167 countries) in Health. The 2021 Global Health Security Index ranks Pakistan 130th out of 195. In 2019, Pakistan's expenditure on healthcare was 3.38 % of GDP, 166th out of 186 countries (World Bank, World Development Indicators). While a highly subsidized multi-tier public health system exists, its perpetual lack of funding means that approximately 67.4 % of households report utilising the private health care system (Lim et al., 2018).

Pakistan has a large private healthcare system that typically addresses gaps in the public system and serves as the relatively larger provider of healthcare in Pakistan (Shaikh, 2015). Small private health clinics, often constituting a single general practitioner abound (in our sample, only 3 out of 36 clinics were not single practitioner). These health clinics typically serve as the first point of contact for most patients (Naseer et al., 2012). These private clinics compete for clientele, particularly in the larger cities, and depend largely on patient recommendations for their continued operation.

To understand the dynamics of this form of healthcare provision, we consulted with healthcare providers in the area at each stage of our design. Such clinics typically operate in the afternoon, out of small single room storefronts. As is the case in India (reported by Das et al., 2016), providers may also be employed at other public or private hospitals that operate in the morning, and these clinics are their "private practice". Relevant to our design then, is the fact that at these clinics, the appropriate benchmark for quality care may not be textbook best practices, but to provide a reasonable level of care given their constraints. There is typically no triage, and no nurses to help the doctor with their examination. In short, while more expensive clinics are similar to western counterparts, the low-cost system is meaningfully distinct in both processes and goals. Finally, it is important to note that these clinics will typically dispense medicines for treatment as part of their services at no additional cost.

To determine our universe of clinics, we conducted a census of private clinics in two low-income neighbourhoods of Pakistan's second largest city, Lahore: Walton and Dharmapura. Listing was done in two phases: (1) clinics were identified, photographed, and geo-located by local informants. Our research team confirmed these locations, and collected other preliminary information, such as fees and specialities. This process generated a set of 52 clinics, with consultancy fees ranging from PKR 50 to 1000 (about USD 0.42 to 8.40 at the time of the study), which were then refined to a universe of 36 feasible clinics, after excluding irrelevant clinics (i.e., clinics for mental health, paediatrics, and gynaecology). A vast majority of clinics (33 out of 36) were single provider clinics and while our unit of analysis is the clinic, the study was designed such that all visits were at the same time and day for each clinic, to maximise the likelihood of meeting the same healthcare provider.[14]

3. Experimental design

We conduct an in-person audit study, using professional actors hired through a local acting troupe which featured both cisgender male and transgender actors. The actors were provided a standardized script and detailed backstories, with a presentation consistent with asthma. The actors were tasked with obtaining healthcare from a low-cost private clinic. The study uses a total of four actors, two cisgender male, and two transgender actors. The actors were randomly assigned to clinics in two waves, with the first wave visiting each of the 36 clinics once with gender randomised, and then a second wave visiting the same clinics a second time, two weeks after the first visit. The minimum two-week gap was implemented to ensure there was limited contamination across the two visits.

The second wave was cross-randomized such that if the first wave had a cisgender male visit s clinic, then the second wave had a transgender actor visit. Note that once the randomization determined whether the clinic was to be visited by either a cisgender male or transgender actor, we then randomly selected the actual actor that was assigned to a clinic based on their gender category. Hence, the assignment of actor to clinic undergoes two levels of randomization, first on gender, then on actor. This is to ensure that there is no systematic actor pairing by clinic.

Our intention was to highlight differences in treatment in the process of obtaining healthcare. Our choice of low-cost clinics is motivated by two main considerations; first, by paying for services, we avoid ethical concerns of *crowding out* deserving patients in public sector hospitals (which are free), and second, low-cost clinics are the natural first visit for most individuals in urban settings in Pakistan.

We began the study by conducting background ethnographic work interviewing transgender individuals about their healthcare experiences. We considered the idea of using cisgender male actors and asking them to dress as women to simulate the *Khwaja sira* appearance. After our interviews, however, it became clear to us that this was not a feasible strategy, as there was no real way to simulate the *Khwaja sira* experience in a convincing manner. Hence, we took the decision to hire transgender actors, which opens up the possibility of unobserved differences explaining our results. We mitigate as many of these factors as we can, as explained below, but there is still the possibility as our actors were indeed different people.

Our hiring of professional actors is a critical design feature, which ensures consistency in interactions, but yields a small sample due to high marginal costs. We auditioned 12 actors (supplied by the acting troupe) at a clinic (outside of our catchment area) with three confidant healthcare providers that served as independent judges. Based on actor performance (ratings by the healthcare providers), we selected 4 actors for the study: 2 cisgender male and 2 transgender actors.

Our actors were given a consistent background, symptoms and

[14] Note, however, that because we did not record any audio or video of the interaction between patient and healthcare provider, we are unable to state with certainty that our patients faced the exact same healthcare provider when visiting any given clinic. We did ask our patients to record the name of the doctor and report it to us during the exit interview, however. In 33 out of 36 clinics, both clinic observations had the same name of the doctor. In 3 visits, the name of the clinic was provided instead, so we cannot be certain that the actors saw the same healthcare provider. Our results are robust to excluding these clinics, however.

opening script, adapted from the one used by Das et al. (2016). Our actors (standardised patients) reported symptoms that were consistent with asthma. We workshopped the script by having our actors hold multiple practice sessions with confidant healthcare providers. We then piloted and adjusted our safety protocols by conducting visits to 2 clinics outside our study area (data not included). Finally, before the full implementation of the study, our actors were once again tested for standardisation by a panel of confidant healthcare providers. This was a critical step to ensure consistent delivery and allow greater control over each patient-provider interaction.

Before each visit, actor health was checked to ensure they did not carry any contaminating physical symptoms. Actors were also asked to provide a verbal opening script to make sure the opening was consistent before each visit. Across all visits, actors were accompanied by a research assistant who would remain outside the clinic. The research assistant formed part of our safety protocol, in addition to collecting data immediately after a completed visit. For our actors' safety, we refrained from conducting any audio-visual recording of the visits: all data collection was based on the actor's (immediate) recollection. Our translated script, actor background texts and survey instrument can be found in Appendix A.2 and A.3.

Upon completion of all visits, medicines dispensed (typically unmarked) or prescribed were identified and categorised by a team of three pharmacists. Overall, the study took a year to run, with background work, such as focus groups with our panel of doctors, and identifying an appropriate acting troupe beginning in the summer of 2017 and continuing into the fall. Preparations for the visits (auditions, training, piloting and two rounds of listing) took place in the Winter of 2017, with our rounds of data collection taking place in February and March 2018. Finally, medication categorisation and data cleaning were completed over the summer of 2018.

3.1. Differences from previous designs

The first point of difference from previous studies is the individuals that serve as our standardized patients. Unlike previous studies that typically employ enumerators or research assistants (see, for example, Mujcic and Frijters, 2021 or Grosskopf and Pearce, 2020), we employ professional stage actors. Our actors come from a well-known acting company, which has worked extensively with transgender actors. While trained actors come at a significantly higher cost than simple enumerators, we made this design choice to ensure that interactions were as close as possible to each other.

The second point of difference is that, because we are interested in detailing out the entire visit to the clinic, our actors are accompanied with research assistants, who administered an experience survey to the actor immediately after the conclusion of their visit. What this means is that we attempt to extract information from the standardized patient as soon as it is possible (often just outside, but out of sight, of the clinic). This was a critical step to ensure that the responses did not suffer from recall bias and were as accurate as could possibly be achieved.

Third, our actors went through an extended rehearsal process, memorizing the detailed backstory and responding to any possible question healthcare providers could ask. The rehearsal process lasted two weeks in total, culminating in recorded sessions with an independent healthcare provider so that the actors could observe each other and get as consistent in their delivery and interactions as possible. Points that were discussed, for example, is how aggressive the patient needs to be when asking for help, how fearful they needed to be, which expressions they chose, and how much eye contact was made. Actors were also trained to refuse any invasive treatments (such as injections) during this process.

Finally, before each visit to the clinic, the actors would meet with the field coordinators and research assistants and were asked to revise their scripts to make sure each visit was similar across both actors and time.

3.2. Threats to validity

Note that the details of the interactions can only be recorded with an in-person audit study, and not with a correspondence study, which only allows for capturing partial outcomes (Mujcic and Frijters, 2020). One important critique of audit studies posited by Heckman (1998) is that since the ideal study would mean that the actors are identical, except for a transgender signal, we would have ideally hired the same actor to portray a cisgender male and a transgender patient (see Riach and Rich, 2002; Pager, 2007; Mujcic and Frijters, 2021; for similar discussions). After speaking with the transgender community during background research, however, it became clear to us that the portrayal of a transgender patient is more than simply a change in wardrobe. To capture the exact details of a transgender patient visit to a health clinic we needed to hire transgender actors. Since transgender actors are different people from our cisgender male actors, we cannot rule out the fact that there may be unobservable factors driving our differences. Other studies (such as Mujcic and Frijters, 2020) hire multiple actors to deal with such issues, such that with a large enough sample of actors, these concerns may be mitigated. Here, we faced two challenges: first, the high cost of hiring professional actors, and second, of locating transgender actors that would be willing to participate in (what they might perceive as a risky project). Ultimately, we decided that hiring fewer actors but ensuring consistent delivery was the better design choice given our constraints.

While we did not reveal the purpose of the study to our actors, they did all train together to generate consistent delivery, and it is reasonable to infer that they may have guessed our intentions. By focusing our attention on the actions of the healthcare provider, and less on the beliefs of our actors, we mitigate this concern somewhat, but we cannot eliminate it. For example, our actors were free to report false information that suited their beliefs (or experimenter demand) rather than their actual experience. Were this the case, however, we would expect to find more differences in patient experience than we actually do, giving us some confidence that our actors reported their experience truthfully. On most of our patient experience measures we find no differences, with the exception of the use of respectful pronouns to refer to our patients, where we find that our transgender actors are treated relatively better, not worse ($p<0.05$). This suggests that our actors were truthful about their experience.

3.3. Variables of interest

A major strength of our study is that we are able to document the patient visit in extensive detail, which many audit studies do not. To do this, we needed to plan for each action that healthcare providers could take. We started with the scripts and survey designed by Das et al. (2016) for patients exhibiting symptoms consistent with asthma but adapted it to our context. In addition, we also use independent pharmacists to identify the (unmarked) medicines dispensed to our patients as part of their visit. Note that dispensing basic medicines is part of a typical clinic visit in these contexts, while more advanced medication is prescribed and needs to be purchased from a pharmacy. Dispensed medicines have the downside of being put in local packaging, and in 11 cases, liquid medicines leaked during transport, and destroyed other medicines (in pill form) that were packaged together. Hence, these observations are coded as dispensed, and are relevant for analysis on the extensive margin (testing whether medicines were dispensed or not) but are excluded for the intensive margin (which types of medicines were prescribed or dispensed).

Our primary focus is to determine whether healthcare professionals treat transgender patients differently. Healthcare professionals have well-defined guidelines and rubrics, one route of analysing these effects would be to compare observed behaviour to pre-existing guidelines. However, given our setting, the guidelines may not be appropriate, and so we use the cisgender male patient as our benchmark. We do leverage the guidelines to help pre-specify our variables of interest, but measure

differences in behaviour relative to cisgender male patients.

We utilise the British guidelines on the management of asthma (SIGN 2019: British Thoracic Society Scottish Intercollegiate Guidelines Network, 2008)[15] to pre-specify our diagnostic variables of interest (Table 1).

In addition, we also measured the patient's subjective evaluation of the clinic environment, the time taken at each stage of the process, fees paid, as well as any treatment recommendations (including injections offered, medicines dispensed, and tests prescribed).

In addition to the variables identified by the guidelines, we also analyse differences in treatment recommendations. Most visits (80 %) resulted in medicines being dispensed, with the cost included in the consultation fee. A significant number of these medicines were dispensed in unmarked "packets", typically arranged by how and when they were to be taken. Syrups were also dispensed in unmarked plastic bottles, that on some occasions leaked and destroyed other medicines dispensed in the same visit. With the help of three independent pharmacists, we were able to ascertain the type of medication dispensed for 30 clinics.

3.4. Caveats and multiple hypothesis testing

We employ a randomised in-person audit study which allows us to quantify differences in healthcare received by our standardized patients. Audit studies avoid any Hawthorne effects, as our subjects (i.e., the clinics and healthcare providers) are unaware of the study. Furthermore, we hired professional actors as they were able to perform their tasks consistently, allowing us to control for any patient effects.

Despite these benefits, there are however a few limitations to the audit design. First, audit studies are expensive, both in monetary costs and administrative overhead. This meant that we have a relatively small sample, though we note that important studies in the past have also been subject to small samples.[16] Furthermore, we made the difficult choice of excluding cisgender female patients from the study. Cisgender female patients would allow us to compare the behaviour of healthcare providers with patients, where they may also avoid physical contact. However, financial considerations forced us to use a single benchmark, and cisgender male patients were the natural choice due to the expectation that they would receive the highest level of care in this context. We also note, that within the South Asian context, *Khawaja sira* are a distinct third gender, and so while comparisons with cisgender females would be beneficial, comparison between two underprivileged genders is not necessary to establish discrimination against one. However, while a comparison with cisgender females is out of scope for our research question, it is an important avenue for future work to try and address the gaps that this yields.

Like most other experimental studies, we engage in pre-specified multiple hypothesis testing. While pre-specification is a standard method for addressing concerns about post-hoc multiple hypothesis testing in the literature, we note that even when pre-specified we have a total of 37 hypotheses, which may increase the probability of obtaining at least one false positive. We correct for multiple hypothesis testing ex-post using the FDR (False Discovery Rate) method first proposed by Benjamini and Hochberg (1995). The FDR method requires the researcher to set a q-value equal to the expectation of false rejections. For example, if $q = 0.15$, the researcher is allowing for 15 % of their discoveries to be false. The use of FDR is appropriate for exploratory studies like ours, as the cost of a false discovery maybe low.

Rather than set a particular q-value (as is the norm in most social sciences), we like other economists who use the FDR method, deploy Anderson's sharpened q-values (Anderson, 2008; Banerjee et al., 2015; Bryan et al., 2021). This methodology varies the step-down FDR (Benjamini et al., 2006) threshold and for each hypothesis calculates the minimum q-value for which it would be rejected. A sharpened q-value of 0.15 then indicates that the hypothesis would be rejected for q-values above 0.15.[17] Finally, given our small sample of clinics and visits, we also check the robustness of our standard errors by conducting permutation tests using the same specification as our regressions. Both q-values and p-values generated by the permutation tests are given at the bottom of each section in Table 2

Table 1
Variables used for diagnosis of asthma.

Patient history	Physical examination	Miscellaneous
1. Previous breathing problems	1. Recorded observation of wheezing	1. Ask for follow-up visits
2. History of asthma (family)	Vital signs:	2. Inquire about past visits to other doctors for same ailment
3. Chest tightness	1. Pulse	3. Recommend advanced tests
4. Episodic nature of cough	2. Temperature check	4. Throat Examination (to rule out other ailments)
5. Exposure to allergens	3. Blood pressure	5. Prescribe medicines
6. Previous medication		

4. Results and discussion

We test for differences in patient experience and diagnostic processes across cisgender male (control) and transgender (treatment) patients. Table 2 reports the results for each of our pre-identified variables of interest. The table reports the results from a fixed effects model to control for clinic effects. The models also control for the (randomly assigned) wave to account for any order effects (estimates without controls are provided in the appendix, results are consistent across specifications). Note that one visit by a transgender patient was not completed as the clinic in question was not open when we attempted to return, and hence the final analysis contains 71 observations.

We begin by exploring the data for evidence of overt differences in treatment of our patients, meaning any interaction that made our patients feel uncomfortable during their visit (Table 2, Panel A). We find no differences, specifically with regards to patient perceptions of treatment. Both cisgender male and transgender patients reported feeling equally comfortable and to being treated fairly. We do find some suggestive evidence that the transgender patients were more likely to be addressed by more respectful pronouns ($p < 0.05$): providers were more likely to refer to transgender patients using the more respectful pronoun (*app*), as opposed to the more informal pronouns (*tum or tu*). Overall, we find no evidence of transgender patients being treated differently than cisgender male patients outside of the core provider-patient interaction. This analysis alleviates (to some degree) concerns about experimenter demand: that our patients recognized the intent of our study and wanted to give us the answer that they thought we were after. Were that the case, we would have expected to see our transgender patients rating their experience to be far lower that the cisgender male experience. However, we see no evidence of this, indicating that our patients reported their experiences truthfully.

Next, we focus on the diagnostic provider-patient interaction (Table 2, Panel B). We have evidence in favour of healthcare providers avoiding physical contact with our transgender patients. When conducting physical examinations, healthcare providers are observed to

[15] Retrieved from: https://www.sign.ac.uk/our-guidelines/british-guideline-on-the-management-of-asthma/

[16] See for example, Neumark et al. (1996), Pager (2003) and Pager, Bonikowski, and Western (2009).

[17] We note that for exploratory studies, use of high FDR rates is common, and that at a threshold of 20 % we would reject 12 hypotheses, and at the more conservative 15 % and 10 % we would reject 6 and 4 hypotheses respectively.

Table 2
Treatment effects (differences between male and transgender visits).

Panel A: *Patient interaction & perceptions*	Respectful pronoun	Treated fairly	Provider Highly rated	Liked provider	Provider was attentive	Provider took me seriously
Treatment Transgender = 1	0.178** (0.0867)	−0.0347 (0.108)	−0.144 (0.111)	0.0572 (0.110)	−0.0278 (0.113)	−0.144 (0.102)
Treatment *p*-values	0.0477	0.749	0.203	0.605	0.808	0.168
Anderson sharpened *q*-values	0.185	0.715	0.35	0.715	0.715	0.302
Permutation test *P*-value	0.52	0.744	0.212	0.626	0.796	0.232
Constant	0.761*** (0.0621)	0.791*** (0.0760)	0.468*** (0.0770)	0.647*** (0.0797)	0.718*** (0.0741)	0.637*** (0.0640)
Observations	65	70	71	71	71	71
R-squared	0.135	0.024	0.050	0.008	0.004	0.058

Panel B: *Physical Examination*	Auscultation (front)	Auscultation (back)	Pulse checked	Temperature checked (touch)	Temperature checked (thermometer)	Blood pressure checked
Treatment Transgender = 1	−0.288*** (0.0890)	0.172** (0.0783)	−0.114 (0.0808)	−0.0294 (0.0772)	0.0294 (0.0772)	−0.168* (0.0865)
Treatment *p*-values	0.00270	0.0353	0.166	0.706	0.706	0.0597
Anderson sharpened *q*-values	0.034	0.185	0.302	0.715	0.715	0.185
Permutation test *P*-value	0.004	0.134	0.292	0.694	0.744	0.126
Constant	0.443*** (0.0734)	0.589*** (0.0640)	0.255*** (0.0587)	0.156*** (0.0519)	0.154*** (0.0519)	0.351*** (0.0673)
Observations	71	71	71	71	71	71
R-squared	0.251	0.129	0.057	0.008	0.008	0.145

Panel C: *Patient History*	Q re: previous breathing problems	Q re: childhood illnesses (breathing)	Q re: freq. of breathing difficulty	Q re: history of current episode	Q re: length of each episode	Q re: family history	Q re: occupation	Q re: chest pains	Q re: episodic nature of cough	Q re: episode triggers	Q re: current medication
Treatment Transgender = 1	0.176* (0.100)	−0.0539 (0.0674)	−0.0866 (0.0778)	0.00327 (0.117)	−0.144** (0.0610)	−0.230*** (0.0726)	−0.229*** (0.0731)	−0.141* (0.0724)	−0.0539 (0.0906)	−0.0310 (0.0865)	0.0621 (0.0967)
Treatment p-values	0.0877	0.429	0.273	0.978	0.0240	0.00314	0.00352	0.0602	0.555	0.722	0.525
Anderson sharpened q-values	0.229	0.64	0.427	0.907	0.147	0.034	0.034	0.185	0.715	0.715	0.715
Permutation test *P*-value	0.086	0.682	0.268	0.982	0.056	0.002	0.004	0.194	0.568	0.732	0.474
Constant	0.486*** (0.0596)	0.110*** (0.0294)	0.185** (0.0727)	0.349*** (0.0946)	0.186*** (0.0476)	0.259*** (0.0569)	0.271*** (0.0529)	0.267*** (0.0519)	0.153** (0.0673)	0.270*** (0.0587)	0.135* (0.0681)
Observations	71	71	71	71	71	71	71	71	71	71	71
R-squared	0.151	0.093	0.042	0.029	0.150	0.246	0.229	0.135	0.056	0.032	0.097

Panel D: *Medication*	Any medicine prescribed/ dispenses	Medicine characteristics when dispensed Medicines dispensed/ prescribed	Offered injection	Asthma medication	Allergy medication	Antibiotics	Steroids	Cough syrup	Painkillers	Other/ undefined
Treatment Transgender = 1	−0.0882* (0.0476)	0.824* (0.424)	0.232** (0.0910)	0.157 (0.124)	−0.0481 (0.115)	0.272** (0.132)	−0.0801 (0.0562)	0.353*** (0.109)	0.0865 (0.0750)	−0.0353 (0.148)
Treatment *p*-values	0.0721	0.0604	0.0153	0.214	0.678	0.0466	0.163	0.00278	0.257	0.813
Anderson sharpened q-values	0.208	0.185	0.113	0.35	0.715	0.185	0.302	0.034	0.42	0.715
Permutation test *P*-value	0.17	0.208	0.04	0.226	0.696	0.07	0.584	0.004	0.542	0.85
Constant	0.990*** (0.0476)	4.101*** (0.291)	0.205*** (0.0596)	0.220*** (0.0712)	0.667*** (0.0626)	0.361*** (0.0923)	0.360*** (0.0399)	0.306*** (0.0797)	0.318*** (0.0624)	0.583*** (0.109)
Observations	71	59	71	59	59	59	59	59	59	59
R-squared	0.176	0.171	0.195	0.078	0.118	0.219	0.080	0.373	0.207	0.030

Panel E: *Miscellaneous*	Follow-up/Referral.	Past doctor visits.	Prescribed tests.	Throat examined.
Treatment	−0.0799	0.0294	−0.0278	0.0556

(*continued on next page*)

Table 2 (*continued*)

Panel E: *Miscellaneous*	Follow-up/Referral.	Past doctor visits.	Prescribed tests.	Throat examined.
Transgender = 1	(0.114)	(0.0519)	(0.0651)	(0.0926)
Treatment *p*-values	0.488	0.575	0.672	0.553
Anderson sharpened q-values	0.715	0.715	0.715	0.715
Permutation test *P*-value	0.488	0.628	0.844	0.656
Constant	0.353*** (0.0835)	0.0128 (0.0519)	0.0982** (0.0428)	0.311*** (0.0741)
Observations	70	71	71	71
R-squared	0.063	0.020	0.011	0.022

Notes: Linear regression models with clinic fixed effects and order of visit controls. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. FDR corrections reported using Anderson's sharpened q-values. Permutation test p-values using the same specification are also presented for the treatment effect.

avoid more "intimate" physical tests with transgender patients: auscultations were taken from the back ($p < 0.05$), rather than the front ($p < 0.01$); providers were also less likely to check blood pressure of transgender patients ($p < 0.10$). These results are broadly consistent with gender differences in treatment, though have limited bearing on quality of care, as reasonable substitutions were implemented. Furthermore, the results on auscultations are also consistent with the expected treatment of cisgender female patients. Hence, these results are again broadly suggestive, but not conclusive of differential treatment due to patient gender.

Next, we observe differences in patient history (Table 2, Panel C). We expect to find greater differences in this dimension of diagnostic procedures given that healthcare providers can reduce their engagement levels with no discernible impact on patient perceptions (Dutta et al., 2019). Overall, we find evidence consistent with lower engagement with our transgender patients, with nearly all variables concerning patient history displaying some negative impact. Importantly, we find that transgender patients are significantly less likely to be asked questions about both their family history ($p < 0.01$) and their occupation ($p < 0.01$). More striking than the statistical results, we find that not a single healthcare provider in our sample asked transgender patients about their family history, while only one asked them about their occupation (consistent with experiences described in Dutta et al., 2019). We also found that healthcare providers were less likely to ask transgender patients about the length of each episode ($p < 0.05$), and (more tentatively) about any accompanying chest pains ($p < 0.10$) .[18] Taken together, these results provide evidence in favour of doctors employing different diagnostic tools with transgender patients. Note that the questions that were missed (on patient history, occupation, and episode length) are critical steps to differentiating chronic conditions like asthma from temporary conditions like colds and flus.

We next move to patient treatment plans (Table 2, Panel D). The nature of our chosen condition (asthma) is difficult to diagnose within one interaction, needing multiple tests and visits to arrive at the potential diagnosis. This means that diagnostic accuracy is difficult to observe with such a study. Nevertheless, given the differences in interaction we would expect differences in outcomes for our transgender patients. Overall, outcomes are broadly similar across patient types, though with some important differences. First, our transgender patients are (tentatively) less likely to have medicines prescribed/dispensed ($p < 0.10$). Furthermore, we also find that conditional on being dispensed/prescribed medication, transgender patients were given nearly one additional medication, though this result is not significant at traditional levels ($p < 0.10$). Yet again, however, transgender patients are given more medications, not less.

Perhaps more importantly, conditional on being given a treatment plan, transgender patients were significantly more likely to be offered injections (17 transgender patients were offered injections, compared to 10 male patients; $p < 0.05$). This is important because there is little basis for offering injections to our patients. Our patients were under strict instructions to reject any on-site injections; hence we do not know the content of these injections. Altaf and Hutin (2006) and Raglow et al. (2001) suggest that these were most likely B-complex injections, that are commonly given as placebos to placate patients, and are routinely used in low-cost private clinics to generate a perception of service that is typical of markets with credence goods (Olshavsky and Kumar, 2001; Balafoutas et al., 2013). Altaf et al. (2006) note that 94.2 % of injections used in Pakistan are for therapeutic use and are unnecessary. Furthermore, injections are clearly unnecessary for the treatment of the symptoms presented by our patients. Hence, we interpret the higher offer of injections to be consistent with lower quality of patient care.

Finally, transgender patients are more likely to be administered basic cough medicine for their symptoms ($p < 0.01$). This difference coupled with healthcare providers being less likely to inquire about the episodic nature of the cough is suggestive of a different diagnosis for transgender patients, indicating differences in care for transgender patients. We also find some evidence that transgender patients were more likely to be dispensed or prescribed with antibiotics, which is similarly consistent with a different diagnosis for transgender patients.

Table 2, Panel E provides some additional tests on whether patients were asked to follow up to referred to specialists, asked about their past visits to doctors, prescribed tests, or had their throats examined. These are additional tests that we might reasonably expect physicians to undertake and are consistent with the SIGN 2019 guidelines. We find no differences in treatment of transgender patients relative to a cisgender male benchmark, however.

One additional note is that of the actual physician that treated our patients in the clinics. Low-cost private clinics are typically single physician clinics, but it is important to be confident that this was indeed the case for our sample. As part of our protocols, we asked the patient to report the name of the physician to us at the end of the visit. As visits happened two weeks apart but at the same day/time, it was likely that the patients saw the same physician, even for multi physician clinics. We find that for 33 of the 36 clinics, our patients reported the name of the physician, and we can confirm that the name provided was the same. In three of the remaining clinics, the name of the clinic was provided, not the name of the physician, so we cannot be sure that the physician was the same. Our results are robust to dropping these three clinics, however.[19]

Finally, another potential area of concern is the low number of actors used in our study. This is mainly due to logistical reasons, as it is difficult to find available transgender actors for the length of time and commitment required for our study. It may be the case that the results we report are due to unobserved differences between individual actors rather than a response to transgender patients. Appendix Table A3 report the results for each patient separately, using one of our cisgender male patients as the omitted category. We note that the main results (questions about

[18] Each of these results are robust to corrections for multiple hypothesis testing (have a sharpened q-value of less than 0.15, i.e. if we allow for 15 % of our rejections to be false, we would reject all these hypotheses), with the exception of the result on questions about chest pains.

[19] Results are available in the appendix Tables A1; A2.

family history, occupation, length of episode, treatment plan, injection, cough syrup and antibiotics) are consistent in both magnitude and direction for our transgender patients relative to the cisgender male benchmark, giving us confidence that the results are not driven by any one particular actor.

Some of our observed differences in treatment may be motivated by statistical discrimination (Arrow, 1973)[20]: healthcare professionals are less likely to engage in verbal examination (i.e., avoid uncomfortable questions) because they may perceive asking such questions as inappropriate: many transgender individuals are abandoned by their families, and have to take on dangerous and unsavoury professions (Abdullah et al., 2012). Indeed, healthcare professionals may be avoiding such questions for the sake of dignity and patient comfort. Furthermore, healthcare professionals in India have been reported to refuse to touch transgender individuals or check their vitals (Dutta et al., 2019). Ultimately, our healthcare professionals are subsequently more likely to recommend placebo or insufficient treatments for transgender patients, relative to a cisgender male benchmark, consistent with differential treatment plans for an identical health presentation.

A surprising aspect of our study was the lack of overt discriminatory practices: transgender patients were never refused services, nor were they treated poorly, or differently in terms of wait times and other non-clinical procedures. However, we note that private clinics in developing countries (the main primary care providers in such settings) are likely to find discriminatory practices to be very costly (Becker, 1971), and hence have reduced incentives to engage in such practices.[21] As with any small business, discriminating against a certain group is likely to reduce usage by that group, and others who observe and interpret this behaviour as discriminatory and unacceptable.

5. Concluding remarks

This paper presents the results of an exploratory standardized-patient in-person audit study on differential treatment in healthcare for transgender patients by healthcare providers in a low-income country context. We select low-cost private clinics in a developing country with a significant transgender population (Pakistan). We utilize a total of four professional actors; two cisgender male and two transgender actors with standard scripts to assess differences in healthcare delivery. Transgender identity is simple to signal in our context, as transgender patients are easy to identify due to clear differences in appearance. Patients are randomly assigned to 36 clinics in two low-income neighbourhoods in Lahore, Pakistan. Each clinic in our sample is visited twice, once with a transgender patient, and once with a cisgender male patient (order randomly assigned). At the end of each visit, our patients respond to an extensive survey detailing out all aspects of the visit, which forms the bulk of our data. Our design was informed by interviews with local experts (healthcare providers that are outside of our sample), and we also utilize a panel of pharmacists to identify unmarked dispensed medicines. Our methods go well beyond typical audit studies by focusing on data collection on each aspect of the patient experience. Furthermore, through the careful selection of symptoms and protocols, we ensure consistent delivery and identical presentations across multiple actors.

We find evidence that healthcare providers substitute in procedures that require less physical contact; are less likely to engage in verbal examinations of transgender patients; and are likely to recommend different treatment plans. Importantly, we do not find evidence for overt discriminatory practices, indicating that the differences in outcomes are likely attributable to concerns of patient dignity and autonomy. While the level of differential treatment in the population, and against different sub-populations, remain open questions, our study is the first to report systematic differences in patient treatment beyond the issues of access reported by Button et al. (2020). The results also point to some limitations in the provision of healthcare for sub-populations, pointing to challenges in the use of low-cost private clinics as a solution to problems of access to healthcare.

Naturally in a study as complex as this, there are limitations to inference. The biggest limitation of our study is the small sample, which limits our statistical ability to detect meaningful differences between the two types of patients. The second is our choice to not use cisgender female patients, which limits our ability to comment on mechanisms. Nevertheless, even within these limitations, the results that we find are compelling, and the methods that we employ are particularly useful in improving the validity of in-person audit studies. Perhaps the most striking finding is that overt discriminatory practices are not found, though that may be specific to the sample that we collect. Future work should account for these limitations.

Extensions to other areas of healthcare, as well as other dimension of rights, such as access to education, employment, governance and justice, would help quantify differential treatment faced by transgender individuals and highlight weaknesses in current systems. An obvious direct extension of the current exercise is to scale it up to identify additional mechanisms, and to expand to other forms of healthcare provision. Differences in treatment by healthcare professionals (for any reason) can have deadly consequences, something that has been reaffirmed by recent events (Akbar, 2016) and identifying its existence is a crucial first step in rectifying the problem. Finally, extensions to other professions and sub-groups are of interest.

CRediT authorship contribution statement

Husnain F Ahmad: . Sheheryar Banuri: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Farasat Bokhari:** Formal analysis, Resources, Validation.

Data availability

Data will be made available on request.

[20] The economics literature focuses on two main motives for engaging in discrimination, statistical discrimination (Arrow, 1971) vs taste-based discrimination (Becker, 1971). Statistical discrimination is one where observable characteristics (such as gender) are used to substitute for missing information, such as assuming socio-economic status, or health behavior, etc. Taste based discrimination is one where an individual engages in discriminatory practices to avoid loss in utility from interacting with certain types of individuals.

[21] An alternative explanation for the lack of results on overt discriminatory behavior may simply be due to statistical power. Our small sample (36 clinics with 2 visits each) does not allow us to rule out no differences in overt discriminatory practices. Nevertheless, we note that our transgender patients were never refused service and were not asked to wait any more or less than the cisgender (male) patients on average, and if anything, were treated more respectfully.

Appendix

A.1 Additional tables

Table A1
Treatment effects without order controls (differences between male and transgender visits).

Panel A: *Patient interaction & perceptions*

	Respectful pronoun	Treated fairly	Provider Highly rated	Liked provider	Provider was attentive	Provider took me seriously
Treatment	0.172*	−0.0294	−0.143	0.0571	−0.0286	−0.143
Transgender = 1	(0.0873)	(0.108)	(0.110)	(0.109)	(0.113)	(0.102)
Treatment *p*-values	0.0563	0.787	0.204	0.603	0.802	0.171
Constant	0.792***	0.743***	0.451***	0.648***	0.732***	0.620***
	(0.0430)	(0.0526)	(0.0544)	(0.0536)	(0.0557)	(0.0504)
Observations	65	70	71	71	71	71
R-squared	0.123	0.002	0.048	0.008	0.002	0.055

Panel B: *Physical Examination*

	Auscultation (front)	Auscultation (back)	Pulse checked	Temperature checked (touch)	Temperature checked (thermometer)	Blood pressure checked
Treatment	−0.286***	0.171**	−0.114	−0.0286	0.0286	−0.171*
Transgender = 1	(0.0882)	(0.0771)	(0.0802)	(0.0771)	(0.0771)	(0.0874)
Treatment *p*-values	0.00264	0.0327	0.163	0.713	0.713	0.0579
Constant	0.408***	0.592***	0.254***	0.141***	0.169***	0.408***
	(0.0435)	(0.0380)	(0.0395)	(0.0380)	(0.0380)	(0.0431)
Observations	71	71	71	71	71	71
R-squared	0.238	0.129	0.057	0.004	0.004	0.103

Panel C: *Patient History*

	Q re: previous breathing problems	Q re: childhood illnesses (breathing)	Q re: freq. of breathing difficulty	Q re: history of current episode	Q re: length of each episode	Q re: family history	Q re: occupation	Q re: chest pains	Q re: episodic nature of cough	Q re: episode triggers	Q re: current medication
Treatment	0.171	−0.0571	−0.0857	0	−0.143**	−0.229***	−0.229***	−0.143*	−0.0571	−0.0286	0.0571
Transgender = 1	(0.105)	(0.0708)	(0.0758)	(0.117)	(0.0604)	(0.0725)	(0.0725)	(0.0732)	(0.0918)	(0.0874)	(0.101)
Treatment *p*-values	0.112	0.425	0.266	1	0.0237	0.00331	0.00331	0.0589	0.538	0.746	0.574
Constant	0.577***	0.169***	0.169***	0.408***	0.169***	0.225***	0.268***	0.310***	0.211***	0.225***	0.225***
	(0.0518)	(0.0349)	(0.0374)	(0.0575)	(0.0298)	(0.0357)	(0.0357)	(0.0361)	(0.0452)	(0.0431)	(0.0496)
	71	71	71	71	71	71	71	71	71	71	71
Observations	0.073	0.019	0.037		0.143	0.229	0.229	0.102	0.011	0.003	0.010
R-squared	0.171	−0.0571	−0.0857	0	−0.143**	−0.229***	−0.229***	−0.143*	−0.0571	−0.0286	0.0571

Panel D: *Medication*

		Medicine characteristics when dispensed								
	Any medicine prescribed/ dispenses	Medicines dispensed/ prescribed	Offered injection	Asthma medication	Allergy medication	Antibiotics	Steroids	Cough syrup	Painkillers	Other/ undefined
Treatment	−0.0857*	0.840*	0.229**	0.160	−0.0400	0.280**	−0.0800	0.360***	0.0800	−0.0400
Transgender = 1	(0.0483)	(0.428)	(0.0931)	(0.125)	(0.123)	(0.136)	(0.0556)	(0.114)	(0.0803)	(0.147)
Treatment p-values	0.0849	0.0583	0.0192	0.211	0.746	0.0476	0.159	0.00341	0.326	0.788
Constant	0.944***	3.887***	0.268***	0.181***	0.561***	0.262***	0.359***	0.208***	0.404***	0.645***
	(0.0238)	(0.196)	(0.0459)	(0.0573)	(0.0561)	(0.0623)	(0.0254)	(0.0522)	(0.0367)	(0.0675)
Observations	71	59	71	59	59	59	59	59	59	59
R-squared	0.083	0.139	0.152	0.064	0.004	0.151	0.080	0.295	0.040	0.003

Panel E: *Miscellaneous*

	Follow-up/Referral.	Past doctor visits.	Prescribed tests.	Throat examined.
Treatment	−0.0882	0.0286	−0.0286	0.0571
Transgender = 1	(0.115)	(0.0503)	(0.0651)	(0.0918)
Treatment *p*-values	0.449	0.574	0.663	0.538
Permutation test *P*-value	0.429***	0.0282	0.113***	0.282***
	(0.0560)	(0.0248)	(0.0321)	(0.0452)
Constant				
	70	71	71	71
Observations	0.018	0.010	0.006	0.011
R-squared	−0.0882	0.0286	−0.0286	0.0571

Notes: Linear regression models with clinic fixed effects. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A2
Treatment effects with order effects (differences between male and transgender visits) for subsample where doctors are matched.

Panel A: *Patient interaction & perceptions*

	Respectful pronoun	Treated fairly	Provider Highly rated	Liked provider	Provider was attentive	Provider took me seriously
Treatment Transgender = 1	0.196**	−0.0645	−0.156	0.0312	−0.0625	−0.188*
	(0.0961)	(0.114)	(0.121)	(0.116)	(0.120)	(0.106)
Treatment *p*-values	0.0492	0.575	0.207	0.789	0.605	0.0874
Constant	0.739***	0.781***	0.508***	0.692***	0.738***	0.677***
	(0.0669)	(0.0551)	(0.0818)	(0.0849)	(0.0790)	(0.0679)
Observations	59	64	65	65	65	65
R-squared	0.148	0.011	0.054	0.005	0.018	0.094

Panel B: *Physical Examination*

	Auscultation (front)	Auscultation (back)	Pulse checked	Temperature checked (touch)	Temperature checked (thermometer)	Blood pressure checked
Treatment Transgender = 1	−0.281***	0.156*	−0.0938	0	0.0312	−0.156*
	(0.0923)	(0.0802)	(0.0834)	(0.0782)	(0.0849)	(0.0802)
Treatment p-values	0.00459	0.0602	0.269	1	0.715	0.0602
Constant	0.463***	0.569***	0.262***	0.155***	0.169***	0.369***
	(0.0773)	(0.0679)	(0.0624)	(0.0553)	(0.0553)	(0.0624)
Observations	65	65	65	65	65	65
R-squared	0.256	0.116	0.045	0.021	0.009	0.116

Panel C: *Patient History*

	Q re: previous breathing problems	Q re: childhood illnesses (breathing)	Q re: freq. of breathing difficulty	Q re: history of current episode	Q re: length of each episode	Q re: family history	Q re: occupation	Q re: chest pains	Q re: episodic nature of cough	Q re: episode triggers	Q re: current medication
Treatment Transgender = 1	0.156	−0.0625	−0.0938	−0.0312	−0.156**	−0.250***	−0.250***	−0.156*	−0.0938	−0.0312	0.0625
	(0.105)	(0.0748)	(0.0834)	(0.124)	(0.0660)	(0.0782)	(0.0790)	(0.0786)	(0.0937)	(0.0950)	(0.106)
Treatment p-values	0.148	0.409	0.269	0.802	0.0241	0.00310	0.00339	0.0553	0.324	0.744	0.559
Constant	0.489***	0.121***	0.200**	0.399***	0.200***	0.278***	0.292***	0.291***	0.183***	0.294***	0.151**
	(0.0625)	(0.0312)	(0.0773)	(0.0964)	(0.0503)	(0.0598)	(0.0559)	(0.0553)	(0.0645)	(0.0624)	(0.0721)
	65	65	65	65	65	65	65	65	65	65	65
Observations	0.178	0.104	0.045	0.021	0.163	0.266	0.250	0.152	0.062	0.035	0.104
R-squared	0.156	−0.0625	−0.0938	−0.0312	−0.156**	−0.250***	−0.250***	−0.156*	−0.0938	−0.0312	0.0625

Panel D: *Medication*

		Medicine characteristics when dispensed								
	Any medicine prescribed/ dispenses	Medicines dispensed/ prescribed	Offered injection	Asthma medication	Allergy medication	Antibiotics	Steroids	Cough syrup	Painkillers	Other/ undefined
Treatment Transgender = 1	−0.0938*	0.727	0.250**	0.182	0	0.273*	−0.0909	0.364***	0.0909	−0.0909
	(0.0503)	(0.441)	(0.0994)	(0.142)	(0.119)	(0.135)	(0.0635)	(0.104)	(0.0828)	(0.161)
Treatment p-values	0.0718	0.110	0.0171	0.210	1	0.0520	0.163	0.00154	0.281	0.576
Constant	0.986***	4.009***	0.229***	0.247***	0.648***	0.300***	0.362***	0.240***	0.281***	0.674***
	(0.0503)	(0.310)	(0.0624)	(0.0776)	(0.0672)	(0.0867)	(0.0433)	(0.0671)	(0.0670)	(0.111)
Observations	65	53	65	53	53	53	53	53	53	53
R-squared	0.188	0.124	0.208	0.091	0.205	0.182	0.091	0.386	0.227	0.030

Panel E: *Miscellaneous*

	Follow-up/Referral.	Past doctor visits.	Prescribed tests.	Throat examined.
Treatment	−0.125	0.0312	−0.0312	0.0312
Transgender = 1	(0.120)	(0.0553)	(0.0716)	(0.0964)
Treatment *p*-values	0.305	0.576	0.666	0.748
Anderson sharpened q-values				
Permutation test *P*-value	0.404***	0.0149	0.107**	0.324***
	(0.0830)	(0.0553)	(0.0456)	(0.0790)
Constant				
	64	65	65	65
Observations	0.071	0.021	0.012	0.007
R-squared	−0.125	0.0312	−0.0312	0.0312

Notes: Linear regression models with clinic fixed effects and order effects. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p < 0.1$.

Table A3
Actor effects with order controls (Differences across actors, base Male2).

Panel A: *Patient interaction & perceptions*

	Respectful pronoun	Treated fairly	Provider Highly rated	Liked provider	Provider was attentive	Provider took me seriously
KS1	0.0906	0.152	−0.283	0.0971	−0.152	0.00327
	(0.123)	(0.171)	(0.177)	(0.188)	(0.203)	(0.153)
KS2	0.0708	−0.124	−0.115	0.117	−0.164	−0.259
	(0.0827)	(0.232)	(0.149)	(0.192)	(0.196)	(0.176)
Male1	−0.187	0.0875	−0.105	0.111	−0.285	0.0105
	(0.160)	(0.230)	(0.230)	(0.225)	(0.236)	(0.227)
Constant (Male2)	0.866***	0.752***	0.516***	0.595***	0.852***	0.634***
	(0.0870)	(0.162)	(0.130)	(0.118)	(0.128)	(0.111)
Observations	65	70	71	71	71	71
R-squared	0.168	0.088	0.078	0.015	0.050	0.105

Panel B: *Physical Examination*

	Auscultation (front)	Auscultation (back)	Pulse checked	Temperature checked (touch)	Temperature checked (thermometer)	Blood pressure checked
KS1	−0.254	0.175	−0.298**	−0.205	0.270**	−0.368***
	(0.167)	(0.127)	(0.125)	(0.151)	(0.124)	(0.129)
KS2	−0.158	0.135	−0.0899	−0.0971	−0.119	0.0198
	(0.124)	(0.159)	(0.120)	(0.106)	(0.108)	(0.119)
Male1	0.187	−0.0401	−0.155	−0.256**	0.0654	0.0237
	(0.172)	(0.159)	(0.155)	(0.125)	(0.137)	(0.155)
Constant (Male2)	0.354***	0.608***	0.327***	0.276***	0.125*	0.338***
	(0.119)	(0.122)	(0.0933)	(0.0854)	(0.0673)	(0.0863)
Observations	71	71	71	71	71	71
R-squared	0.275	0.131	0.149	0.122	0.218	0.271

Panel C: *Patient History*

	Q re: previous breathing problems	Q re: childhood illnesses (breathing)	Q re: freq. of breathing difficulty	Q re: history of current episode	Q re: length of each episode	Q re: family history	Q re: occupation	Q re: chest pains	Q re: episodic nature of cough	Q re: episode triggers	Q re: current medication
KS1	0.374**	−0.0424	−0.0173	−0.297*	−0.0101	−0.312**	−0.311**	0.00584	0.0739	−0.181	0.309*
	(0.173)	(0.153)	(0.0928)	(0.174)	(0.0480)	(0.131)	(0.126)	(0.119)	(0.0951)	(0.109)	(0.156)
KS2	0.00719	−0.178	0.146	0.299	−0.115	−0.329**	−0.324**	−0.248*	0.0378	0.113	−0.155
	(0.161)	(0.115)	(0.147)	(0.210)	(0.107)	(0.135)	(0.148)	(0.132)	(0.149)	(0.182)	(0.200)
Male1	−0.00318	−0.136	0.345**	0.0500	0.168	−0.199	−0.195	0.0187	0.237	0.0214	−0.00962
	(0.213)	(0.117)	(0.158)	(0.220)	(0.132)	(0.134)	(0.153)	(0.136)	(0.188)	(0.184)	(0.188)
Constant (Male2)	0.489***	0.175**	0.0215	0.321**	0.108	0.352***	0.363***	0.260**	0.0412	0.258**	0.143
	(0.119)	(0.0687)	(0.104)	(0.156)	(0.0699)	(0.0910)	(0.0969)	(0.104)	(0.0979)	(0.111)	(0.113)
Observations	71	71	71	71	71	71	71	71	71	71	71
R-squared	0.234	0.132	0.185	0.214	0.235	0.288	0.269	0.219	0.110	0.113	0.251

Panel D: *Medication*

		Medicine characteristics when dispensed								
	Any medicine prescribed/ dispenses	Medicines dispensed/ prescribed	Offered injection	Asthma medication	Allergy medication	Antibiotics	Steroids	Cough syrup	Painkillers	Other/ undefined
KS1	−0.174*	1.600*	0.275*	−0.0562	−0.242	0.442*	−0.169	0.460**	0.126	0.125
	(0.0937)	(0.924)	(0.146)	(0.202)	(0.191)	(0.257)	(0.130)	(0.175)	(0.128)	(0.193)
KS2	−0.147	0.951*	0.263	−0.145	−0.165	0.333	−0.168	0.313**	0.0964	0.256
	(0.0944)	(0.552)	(0.177)	(0.279)	(0.181)	(0.200)	(0.126)	(0.151)	(0.173)	(0.306)
Male1	−0.156*	0.790	0.0789	−0.503*	−0.289	0.208	−0.170	0.0483	0.0436	0.447
	(0.0871)	(0.834)	(0.202)	(0.262)	(0.234)	(0.264)	(0.116)	(0.202)	(0.157)	(0.292)
Constant (Male2)	1.063***	3.689***	0.167	0.484**	0.818***	0.253	0.449***	0.281**	0.295**	0.348*
	(0.0826)	(0.564)	(0.117)	(0.201)	(0.144)	(0.186)	(0.0906)	(0.108)	(0.116)	(0.193)
Observations	71	59	71	59	59	59	59	59	59	59
R-squared	0.255	0.228	0.200	0.232	0.182	0.248	0.169	0.387	0.211	0.127

Panel E: *Miscellaneous*

	Follow-up/Referral.	Past doctor visits.	Prescribed tests.	Throat examined.
KS1	−0.218	−0.0290	−0.0740	0.123
	(0.174)	(0.0461)	(0.0829)	(0.138)
KS2	−0.0442	0.169	−0.0198	−0.176
	(0.198)	(0.106)	(0.142)	(0.161)
Male1	−0.0986	0.107	−0.0367	−0.208
	(0.258)	(0.118)	(0.136)	(0.178)
Constant (Male2)	0.399***	−0.0390	0.115	0.411***
	(0.141)	(0.0618)	(0.0817)	(0.116)
Observations	70	71	71	71
R-squared	0.092	0.134	0.020	0.108

Notes: Linear regression models with clinic fixed effects. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

A.2 Patient script and background

English Translation

Urdu text and full translation available on request.

Initial Script:

Hello doctor, I had severe breathing problems last night. I had difficulties in taking deep breaths. I got really scared.

Backstory

Being the friendly and helpful person that he is, he often visits his friends to help out with all kinds of chores.

Over the past week, he has been going back and forth on a motorbike to his friend's house every day. Last evening, he went over to his friends' house to help them with their moving to a new house (shifting). While he was there, he had a really bad and scary attack. After eating a simple dinner of dal, rice and sabzi they were cleaning the house when Mohammed Ali started coughing and had a lot of difficulty breathing.

He felt very bad for about 15–20 min; afterwards he felt tired and weak for hours and had to go to sleep. As compared to earlier episodes, this one seemed much more severe and took a lot longer to settle. He was unable to take his friend's medication since he was not at home. His-neighbor suggested that he should visit a good doctor who practices nearby.

Patient Background

Diet: Bread and vegetables, and occasionally lentils and rice (dal chawal);

- Father's name: Bashir Ali
- 25 years, unmarried
- Has frequent breathing problems
  - (3–4 times per year)
  - usually when cleaning his room
  - when pollution is high
  - when the season changes
- Breathing problems happen quite often
  - about 2–3 times per year
  - happening from childhood
  - elders say used to cough a lot as a child
- Parents died at young age
- Occupation: fieldworker at a local NGO
- No smoke / drink
- Primary school graduate
- Cheerful personality
- Takes a pill for breathing troubles (name unknown)
- Daily routine: wakes, cleans, works – takes break – works, eats, goes sleep
- Appearance: shalwar kameez
- Residence (if pressed):
  - Baghbanpura (if clinic is in Dharampura)
  - Makkah Colony (if clinic is in Walton)

A.3 Exit survey

#	Module 1: Administration (To be filled pre-visit) Question	Response	Additional notes
1.01	Patient gender:	1 = Male; 2 = Trans	
1.02	How is the patient feeling? Please probe about any fever, cough, or other obvious issues. Please make detailed notes about their response.		
1.03	Doctor's Gender?	1 = Male; 2 = Female	
1.04	At what time did you reach the area? HH: MM:SS		
1.05	At what time did you exit the area? HH: MM:SS		
1.06	Name of the Clinic (from the schedule)		
1.07	Clinic address/location (from the schedule)		
1.08	Was the clinic location correct?	1 = Yes; 2 = No	
1.09	Clinic ID		
1.10	Clinic GPS coordinates		
1.11	Doctor name (from schedule)		
1.12	Time patient went inside clinic: HH:MM:SS		
1.13	Time patient exited clinic: HH:MM:SS		
1.14	Time patient went inside the doctor's room: HH:MM:SS (from the Patient)		

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#	Module 1: Administration (To be filled pre-visit) Question	Response	Additional notes
1.15	Time patient came outside from the doctor's room: HH:MM:SS (from the Patient)		
1.16	Date: DD/MM/YYYY		
1.17	Patient name (Actor name)		
1.18	Patient ID (from schedule)		
1.19	Interviewer name (RA name)		
1.20	Interviewer ID (from schedule)		
1.21	Was the visit completed successfully?	1 = Yes 2 = No	
1.22	If not, explain why?		

#	Module 2: Clinic environment I Question	Response	Additional notes
2.00	Please ask: How was the experience overall?		
2.01	Doctor's Gender (from the Patient)	1 = Male; 2 = Female	
2.02	How many patients were in the waiting room when you entered the clinic? (from the Patient)		
2.03	Was the doctor present when you entered the clinic?	1 = Yes; 2 = No	
2.04	If no to above, what time did the doctor arrive? HH:MM:SS		
2.05	How many patients were in the waiting room when you left?		
2.06	How many patients did the doctor see before you?		
2.07	What was the waiting system? (please give details)		
2.08	How did you get assigned into the waiting system?	1 = Preferential 2 = Normal 3 = Bad 4 = Other (Please Explain)	
2.09	Were you treated fairly?	1 = Highly unfair 2 = Slightly unfair 3 = Neither fair nor unfair 4 = Slightly fair 5 = Highly fair	

#	MODULE 3: PERCEPTIONS ABOUT DOCTOR Question	Response	Additional notes
3.01	Did you like the doctor?	1 = Yes 2 = No	
3.02	Please rate the doctor on a scale of 1 to 5:	= Very bad = Slightly bad = Neither good nor bad = Slightly good 5 = Very good	
3.03	Why did you give the doctor this rating?		
3.04	How likely are you to visit this doctor again?	1 = Highly unlikely 2 = Slightly unlikely 3 = Neutral 4 = Slightly likely 5 = Highly likely	
3.05	Did the doctor create an environment in which you could easily convey your symptoms and concerns easily? Was the doctor attentive?	1 = Highly inattentive 2 = Slightly inattentive 3 = Neither attentive nor inattentive 4 = Slightly attentive 5 = Highly attentive	
3.06	Did the doctor appear to be knowledgeable about your illness?	1 = Highly unknowledgeable 2 = Slightly unknowledgeable 3 = Neither 4 = Slightly knowledgeable 5 = Highly knowledgeable	
3.07	Please explain why, or give examples of how you assessed doctor knowledge		
3.08	Did the doctor address your worries seriously?	1 = Not at all seriously 2 = A little seriously 3 = Very seriously	
3.09	Please explain why you thought the doctor was/was not taking your worries seriously		
3.10	Did the doctor explain anything about your illness? Please explain	1 = No information at all 2 = A little information 3 = An appropriate level of information 4 = A lot of information	
3.11	Did the doctor explain your treatment plan? Please explain	1 = No information at all 2 = A little information 3 = An appropriate level of information 4 = A lot of information	
3.12	Please explain		
3.13	How did the doctor refer to you?	1 = Respectful 2 = Neutral 3 = Casual 4 = Other	
3.14	What gender did the doctor refer to you as?	1 = Masculine 2 = Feminine	

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#	MODULE 3: PERCEPTIONS ABOUT DOCTOR Question	Response	Additional notes
		3 = Mixed 4 = Other (write in)	
3.15	Any other question asked that was not listed above		
3.16	Any other problems?		

#	Module 4: Perceptions about the attendant Question	Response	Additional notes
4.01	Attendant's Gender? (from the Patient)	1 = Male; 2 = Female	
4.02	Did the attendant create an environment in which you could convey your symptoms and concerns easily?	1 = Highly inattentive 2 = Slightly inattentive 3 = Neither attentive nor inattentive 4 = Slightly attentive 5 = Highly attentive	
4.03	Did the attendant address your worries seriously?	1 = Not at all seriously 2 = A little seriously 3 = Very seriously	
4.04	How did the attendant refer to you?	1 = Respectful 2 = Neutral 3 = Casual 4 = Other	
4.05	What gender did the attendant refer to you as?	1 = Masculine 2 = Feminine 3 = Mixed 4 = Other (write in)	

#	Module 5: Doctor interaction I Question	Response	Additional notes
5.01	What was your opening statement?	1 = Correct (as per script); 2 = Incorrect (something else)	
5.02	If incorrect, what was said?		
5.03	Did the doctor ask about (probe):		
5.03.01	Breathing difficulty (current episode)	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.02	Cough?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.03	Expectoration (i.e. does anything come up such as mucus/blood or is this a dry cough)?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.04	Have you had breathing problems previously?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.05	Since when have you had breathing problems?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.06	How often does this happen?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.07	Is the shortness of breath constant or episodic?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.08	What triggers episodes?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.09	How long does an attack last?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.10	Did you eat anything that you had not taken before?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.11	Childhood illnesses especially re: cough or breathing problems?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.12	Age?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.13	Fever?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.14	Chest pain?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	

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#	Module 5: Doctor interaction I Question	Response	Additional notes
5.03.15	Weight loss?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.16	Night Sweats?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.17	Throat or upper respiratory symptoms?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.18	Cigarette?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.19	Occupation?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.20	Questions regarding family history?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.21	Have you seen a doctor about this before?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.22	Any medicines currently taking?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.03.23	Anything else that was asked?	1 = Yes 2 = No and information not volunteered 3 = No and information was volunteered	
5.04	Did the Doctor check?		
5.04.01	Pulse?	1 = Yes 2 = No	
5.04.02	Blood Pressure?	1 = Yes 2 = No	
5.04.03	Auscultations front (Checked with stethoscope)	1 = Yes 2 = No	
5.04.04	Auscultations back (Checked with stethoscope)	1 = Yes 2 = No	
5.04.05	Throat exam	1 = Yes 2 = No	
5.04.06	Temperature attempted with thermometer	1 = Yes 2 = No	
5.04.07	Temperature taken by touch	1 = Yes 2 = No	
5.04.08	Other invasive examination attempted?	1 = Yes 2 = No	
5.04.09	Other investigations recommended?	1 = Yes 2 = No	
5.04.10	Any tests prescribed?	1 = Yes 2 = No	
5.04.11	Did the Doctor referred you to anyone? To whom?	1 = Yes 2 = No	

#	Module 6: Doctor interaction - II Question	Response	Additional notes
6.01	Prescribed or offered inhaler?	1 = Yes 2 = No	
6.02	Injection offered?	1 = Yes 2 = No	
6.03	Educated patient regarding breathing problems?	1 = Yes 2 = No	
6.04	If yes, what did the doctor say?		
6.05	Fee Charged by clinic		
6.06	Cost of medicines dispensed		
6.07	Total Fee		
6.08	Did the doctor ask you to return?	1 = No 2 = Return to get a refill of the medicine 3 = Return after completion of recommended test 4 = Unconditional return: After how many days? ___ 5 = Unconditional return: After how many weeks?___	
6.09	Did the doctor discuss a possible diagnosis?	1 = Yes 2 = No	
6.10	If yes, then what was the diagnosis?		

(*continued on next page*)

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#	Module 6: Doctor interaction - II Question	Response	Additional notes
6.11	If yes, was the diagnosis correct? (Fill in)	1 = Asthma, Allergic Asthma, Bronchial Asthma 2 = Allergies 3 = Anything else	

#	Module 7: Medicines Question	Response	Additional notes
7.01	Medicines dispensed?	Provide details below	
7.01.01	Name: Dose: Frequency: Duration:		
7.01.01	Name: Dose: Frequency: Duration:		
7.01.01	Name: Dose: Frequency: Duration:		
7.01.01	Name: Dose: Frequency: Duration:		
7.01.01	Name: Dose: Frequency: Duration:		
	Add more if needed		
7.02	Medicines prescribed?	Provide details below	
7.01.01	Name: Dose: Frequency: Duration:		
7.01.01	Name: Dose: Frequency: Duration:		
7.01.01	Name: Dose: Frequency: Duration:		
7.01.01	Name: Dose: Frequency: Duration:		
7.01.01	Name: Dose: Frequency: Duration:		
	Add more if needed		

#	Module 8: Clinic environment II Question	Response	Additional notes
8.01	Cleanliness of the clinic	1 = Highly unclean 2 = Slightly unclean 3 = Neither clean nor unclean 4 = Slightly clean 5 = Highly clean	
8.02	Furniture Quality	1 = Very low quality 2 = Slightly low quality 3 = Neutral 4 = Slightly high quality 5 = Very high quality	
8.03	Paint Quality	1 = Very low quality 2 = Slightly low quality 3 = Neutral 4 = Slightly high quality 5 = Very high quality	
8.04	Quality of lighting	1 = Very low quality 2 = lightly low quality 3 = Neutral 4 = Slightly high quality 5 = Very high quality	
8.05	Size of the Clinic	1 = Small 2 = Medium 3 = Large	

References

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