10-2-2019

Trust in Hospitals-Evidence from India

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Recommended Citation

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Keywords

trust, violence, public and private hospitals, doctors, corruption, malpractices

Disciplines

Health Services Administration | International Public Health | Social and Behavioral Sciences

Trust in Hospitals-Evidence from India[1]

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Abstract

Various explanations have been offered for outbursts of violence against doctors and other staff in India, drawing attention to growing supply-demand imbalance in healthcare, quality deterioration, overburdened doctors, weak security for medical staff, high expectations of patients who come in advanced stages of chronic and other illnesses, overcrowding of public hospitals with limited sanitary facilities. But underlying all these explanations is lack of trust in doctors and hospitals-especially public. Our focus here is on trust and its covariates over the period 2005-2012. The motivation stems from the fact that the existing evidence is patchy and scattered. Our aim, therefore, is to build on the empirical evidence through a systematic state-of-art analysis of trust in public and private hospitals and doctors. Combining our analysis with other evidence, we identify specific challenges to build patient-hospital trust and how these could be overcome.

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JEL Codes: D63, H11, H51, I12, I18

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Trust in Hospitals-Evidence from India

1. Introduction

Much of the literature on violence against doctors and other medical staff focuses on supply-demand imbalances in healthcare, overcrowding, drug shortages, negligence of patients in critical conditions, lack of diagnostic facilities (X-ray, ultrasound), death of a patient, expensive cross-referrals, and bribery and corruption (collusion between doctors and pharmaceutical companies). Specific case studies of violence are presented which lack analysis and are not amenable to generalisation. Following important contributions of Tucker et al. (2015) and Nie Et al. (2017), it is argued that violence is rooted in lack of trust in doctors and hospitals. The present study aims to deepen our understanding of covariates of trust/confidence in public and private provision of healthcare, based on a nationwide survey, *India Human Development Survey 2015* (IHDS). This is the first systematic study of its kind. It is based on a panel survey of households in 2005 and 2012. A direct link between mistrust and violence against doctors/hospitals cannot be established as IHDS does not contain data on the latter.

A few cases of violence against doctors/hospitals are reviewed below to set the stage for our econometric analysis of trust in public and private hospitals in India.

Violence against doctors is gruesome and unabated. Much of it is targeted to junior doctors in public hospitals who were sometimes not even involved in the treatment. In April, 2016, services were disrupted in about 20 government medical facilities, including the All-India Institute of Medical Sciences in New Delhi, where some doctors donned safety helmets as a symbol of protest. In government hospitals in Maharashtra and Gujarat, armed police were called for safety of health workers (Sharma, 2017). More than 2000 junior doctors from 17 government –run hospitals in Mumbai (Maharashtra) went on strike for 4 days in March, 2017. At least 4 separate assaults on a junior doctor were reported preceding the strike (Kar, 2017). About 800,000 doctors in India went on strike in June, 2019, following a brutal assault on a junior doctor in Kolkata (West Bengal). Paribha Mukhopadhyay was walking down a corridor at NRS hospital with a colleague when they were attacked by a group of men. Neither doctor had been involved in treating Mohammed Sayeed, 75, who died at the hospital on 10th June, but his outraged relatives attacked the first doctors they came across, turning the hospital into a battleground. Mukhopadhyay suffered a fractured skull and needed a craniotomy (Dhillon, 2019).

Indeed, it has become increasingly common for doctors to be jostled, roughed up, or beaten by angry relatives of the recently deceased.The Indian Medical Association (IMA) has reported that 75% of doctors have suffered physical or verbal violence during their lifetime (Dhillon, 2019).

Families travel long distances after scraping together the cost of bringing an ill-relative to a city hospital. They join teeming crowds with no drinking water and toilets. Exhausted and confused by the medical terminology with no direction, they become emotionally volatile. At the other end are harried doctors dealing with a deluge of patients in overcrowded and conjested conditions, and frequently working 18 hours a day or more.

So when a patient dies, or when relatives are advised to take the patient to another hospital, for, say, dialysis, emotions boil over and violence erupts (Dhillon, 2019).

With the exception of a few centres of excellence (eg, All India Institute of Medical Sciences in New Delhi), most public hospitals are in a deplorable state due to underfunding by the central and state governments. They suffer from an acute shortage of doctors, medical equipment, drugs, space, basic infrastructure (eg, unhygenic toilets, unavailability of drinking water, waiting areas). Consequently, patients get little attention from doctors, are driven from pillar

to post for various diagnostic tests and seldom get any free drugs or medicines. In –patients are forced to live in overcrowded, congested and unsanitary wards and thus vulnerable to various infections (Patel et al. 2015, Almeida et al. 2017). With growth of population and higher life expectancy, the gap between demand for public hospitals and their availability has widened and quality of health care has taken a nose dive.

The widening gap and expansion of insurance have spurred expansion of private hospitals and a heterogeneous mix of private doctors. Government incentives in the form of tax exemptions and subsidised land allotments have attracted business houses to set up large corporate funded hospitals providing specialised services (eg, Max Healthcare). However, most private hospitals are relatively small establishments in the shape of nursing homes. Although much better endowed with financial resources, highly trained doctors and better equipped, the quality of care in the organised private sector remains suspect. Unethical practices (eg, overbilling and unnecessary prescriptions, procedures, and diagnostic tests) driven by profit maximisation are not uncommon (Patel et al.2015). Two grisly examples suffice. In November, 2017, Fortis Hospital, Gurugram (Haryana), had allegedly overcharged a family for treating their daughter for dengue. The seven-year-old girl did not survive and a bill of Rs 16 lakh (Rs 1.6 million) for a 15-day treatment was handed to the family. In another case a month later, Delhi Max Hospital was in the news after the hospital declared new-born twin babies dead. However, later on, one of them was found to be alive (Outlook Web Bureau, 11 December 2017). There was a massive outrage and the licence was cancelled by the Delhi government but intriguingly there was no violence against the doctors. One plausible explanation is better security of doctors through hospital staff (some of these hospitals employ bouncers to manage the patients and their relatives/friends) and greater clout with local police that is at their beck and call should a nasty situation arise.

Although several states have enacted laws criminalising violence against healthcare providers, these have not curbed violence largely because of poor enforcement (Sachan, 2019, Patel et al. 2015).

While explanations of eruptions of violence rely largely on supply-demand imbalance in healthcare, pervasive negligence, deterioration in quality of healthcare, overcrowding of public health facilities, it is intriguing why so little attention is given to serious cases of mistreatment/misdiagnosis, preventable deaths, high levels of corruption, and conspicuous absence of mass protests and violence against heterogeneous private healthcare providers ranging from quacks/unlicensed doctors to small private nursing homes and "5 star" corporate hospitals equipped with world class medical services. What is of course common to both public and private health care services is a weak regulatory system. This study's point of departure is that it shifts the focus to a clearer and deeper understanding of trust in both public and private healthcare facilities, and its covariates as it has both *intrinsic* and instrumental roles in patient-doctor relationships (Hall et al. 2001)[2]. Following Tucker et al. (2015) and Nie et al. (2017), outbursts of violence against doctors and hospitals are rooted in mistrust between patient-doctor.

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[2] Intrinsically, it is the defining characteristic that gives the doctor-patient relationship meaning, importance and substance. Instrumentally, it is widely believed to be essential for effective therapeutic encounters. It is in fact found to influence behaviours and attitudes including willingness to seek care, reveal sensitive information, submit to treatment and adhere to treatment regimens (Hall et al. 2001).

2. Scheme

The present study is structured as follows. In Section 3, salient features of India's health system are delineated, emphasising its heterogeneity. In Section 4, we focus on the meaning and measurement of patient-doctor/hospital trust; health outcomes and violence against doctors/hospitals. Section 5 is devoted to the methodology including salient features of India Human Development Survey (2015), jointly conducted by University of Maryland and National Council of Applied Economic Research, New Delhi; comparison of trust between public and private healthcare, based on cross-tabulations; and an algebraic exposition of the ordered probit specification. Section 6 offers an interpretation of the results from a comparative perspective. Section 7 broadens the discussion with an emphasis on the significance of our contribution and the insights from our analysis. Finally, Section 8 reviews health sector reforms and feeble implementation of important health care Acts, and why the emphasis must shift from violence prevention to building of patient-doctor trust.

3. Salient Features of India's Health System

Based on a detailed analysis of the National Sample Survey data from 1995 through 2014, Almeida et al. (2017) offer an insightful account of the evolution of India's health system. The focus of their analysis is on how good quality public health care lowers out- of -pocket expenditure (OOP) through competitive pressure on private hospitals to lower their prices.

Over the decade 2004-2014, the demand for health care has grown but is not matched by higher government spending on hospital care and availability of insurance. As a result, households have remained the main source of healthcare financing at 67.7 % of total health care expenditure, slightly lower from 71.1 % 10 years earlier.

An associated consequence is that a greater proportion of households face catastrophic hospital care bills. In 2014, of households that incurred health expenditure amounting to at least 40 % of their average consumption expenditure (ACE), about 30 % were in the bottom ACE quintiles while only about 12 % in the top quintile. Besides, the distribution of catastrophic health expenditure across ACE quintiles has worsened over time-specifically, the shares in the lower quintiles have increased faster than the shares in the higher quintiles (Almeida et al. 2017).

In India, healthcare is provided by private and government clinics, community health centres (CHC), *Ayurveda*, Yoga and Naturopathy, Unani, *Siddha* and Homeopathy (AYUSH) clinics and hospitals. The hospital system includes general and specialised hospitals in the public and private sectors, as well as mental hospitals in the public sector. Public general hospitals include medical college hospitals, district hospitals, sub-district hospitals and CHCs. Private general hospitals comprise all private hospitals and nursing homes. Specialised hospitals offer care for specific illnesses (eg, tuberculosis, cancer and lung diseases). Specialised hospitals also include AYUSH clinics (Almeida et al. 2017).

In 2014, the Ministry of Health and Family Welfare launched the National Urban Health Mission to address the health needs of the urban poor and subsequently merged the National Rural Health Mission and the National Urban Health Mission into a common National Health Mission. The expansion of public health services has been inequitably distributed, with glaring disparities between states and between urban and rural areas. Besides, the quality of health care offered at public health facilities is often uneven and abysmal (Patel et al. 2015)[3].

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[3] Joumard and Kumar (2014) observe that, beyond a select few states and pockets of excellence, public health services are often too far away, lack trained personnel and supplies, and often shut. 41 % of those in rural areas and 45 % in urban areas are not satisfied with treatment by their doctor or facility. Distance is cited by 21 % of

The NSS reveals a steady decline in use of public hospitalisation services in the past two decades (during 1995-2014) and this decline is greater in urban areas. Use of these services has also declined with wealth quintile in both urban and rural areas. Thus the poor suffer the brunt of the poor public health services (Patel et al. 2015).

A key policy response to difficulties in expanding public health services for the poor has been the expansion of government sponsored health insurance schemes. National Health Accounts data show that expenditures on health insurance have risen from 4.2 % to 6.0 % during 2004-2014. Enrolment has also risen: from less than 1 % in 2004 to 12.78 %. Private health insurance has risen from 0.36 % to 2.47 % during this period but has remained miniscule. The NSS data for 2014 show that only the richest quintile is able to purchase private health insurance (Patel et al. 2015).

Shortfalls in public healthcare services have led to a rapid growth of a massive, heterogeneous, and mostly unregulated private health care sector. In 2014, more than 70 % of outpatient care and more than 60 % of inpatient care was in the private sector. Thus private practitioners are the first point of contact in both rural and urban areas for many ailments including fevers and illnesses, and diseases such as tuberculosis. But there are glaring heterogeneities. For example, a high proportion of, and in some areas even the majority of private providers, are unqualified or underqualified[4].

Most private hospitals are small nursing homes. With a few exceptions, the quality of care in the organised private sector is far from reliable. Dishonest practices such as overbilling, unnecessary procedures and diagnostic tests abound. Besides, kickbacks from referrals to other doctors and pharmaceutical and suppliers of medical devices are rife. Such practices remain unchecked because of weak regulatory systems, and trust erodes in both public and public health care systems (Patel et al. 2015, Almeida et al. 2017).

At the high end of the market, the private sector offers state-of-art services. Taking advantage of comparatively low labour costs, "5 star hospitals", with facilities comparable to the most advanced hospitals in OECD countries, have surged. As a result, hospital care has emerged as an export sector (Joumard and Kumar, 2014). However, as noted earlier, misdiagnosis, negligence and overbilling are not uncommon *despite* exorbitant fees.

4. Trust, Health Outcomes and Violence

(i) Definition and Measurement

Various explanations have been offered for outbursts of violence against doctors and other staff, drawing attention to growing supply-demand imbalance in healthcare, quality deterioration, overburdened doctors, weak security for medical staff, high expectations of patients who come in advanced stages of chronic and other illnesses, and overcrowding of public hospitals with limited sanitary facilities, But underlying all these explanations is lack of trust in doctors and hospitals-especially public. This is hinted at but not emphasised enough in recent comments on eruption of violence following a patient's death. Our focus here is on trust and its covariates over the period 2005-2012. The motivation stems from the fact that the existing evidence is patchy and scattered. Our aim is to build on the empirical evidence through

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people in rural areas and 14 % in urban areas and the non-availability of services is cited by 30 % of people in rural areas and 26 % in urban areas.

[4] In rural Madhya Pradesh only 11 % of the sampled healthcare providers had a medical degree, and only 53 % of providers had completed high school. Informal care providers, with no formal training or registration with government for medical practice, represent 55 % of all providers and are also the first point of contact, especially in rural areas (Patel et al. 2015).

a systematic state-of-art analysis of trust in public and private hospitals and doctors, based on a nation-wide survey.

Trust is ambiguous and fuzzy and thus difficult to define. Trust in medical services can be seen as trust in physician and medical institutions, and involves two questions: "whether the physician and medical institutions are competent to make a diagnosis and provide treatment" and "whether the physician and medical institution will act in the best interest of the patient". (Hall et al. 2001, Tang, 2011, Ozawa and Sripad, 2013). It is also argued that trust is inseparable from vulnerability, in that there is no need for trust in the absence of vulnerability (Hall et al. 2001). But, broadly, the salience of trust depends greatly on the patients' circumstances, the extent of risk, characteristics of their illnesses and needs and their access to information. In particular, significant variation in trust across major illnesses (breast cancer, Lyme disease and psychiatric disorder) is observed (Mechanic and Meyer, 2000).

Patient's overall satisfaction with medical service aggregates sub-satisfaction with doctor-patient interaction, with treatment process, with waiting time in hospital, with medical facilities and hospital environment, and with medical costs (Hall et al. 2001, Tang, 2011).

Trust in a known physician has, however, different foundation than trust in a medical institution. The former is based mainly on personal experience and individual personality while the latter depends more on several other factors listed in the previous paragraph including legal/regulatory protection and media exposure[5]. However, some bases of trust are common to both objects of trust, for example, shared social understandings and role expectations. But there are interactions between trust in a physician and a hospital too. Due to possible halo effects, patients' trust in their personal physicians may influence their trust in a hospital or health plan affiliated with their physicians, or, the *reverse* may be true (i.e. institutional trust may influence individual trust) (Hall et al. 2001).

Guided by trusting views about motivations and intentions, unsatisfactory performance may result in forgiveness. Besides, trust has a *cliff* effect in which trust builds for a time but then overextends beyond a physician's actual trustworthiness, leading to an inevitable steep decline or sense of betrayal if a patient dies. More worrying is the likelihood of a violent outrage by the patient's relatives/friends.

A cross-sectional study in resource poor areas of Tamil Nadu, a southern Indian state, throws light on different domains of trust and associated clusters (Gopichandran and Chetlapalli, 2013). Factor analyses are used to identify the components of factors influencing trust in healthcare. Hierarchical cluster analysis is used to determine the number of clusters that the sample could potentially be segmented into.

The study finds that the community-perceived behavioural competence, comfort in approaching the doctor, personal involvement of the doctor, simple and elegant appearance and cultural competence are associated with greater trust in the doctor. They give priority to these elements of trust in the order that they are listed. On the basis of preference given to each of these phenomena, the participants are clustered into four segments.

(a) Comfort-based trust

A segment of the community emphasises that ease of approaching the doctor, not having any inhibitions and feeling comfortable talking to the doctor, influences their trust. They are not particular about the behavioural competence or personal involvement of the doctor. This

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[5] How system trust and interpersonal trust relate to each other is, however, quite complex; trust in a particular care provider does not necessarily translate into trust in the medical profession or in the system as a whole, or vice versa (Kane and Kalnan, 2016).

segment (11 % of the respondents) comprises rural, women, and older age groups, belonging to lower educational and occupation status. The socioeconomic differentials conform to a lower threshold for trust, in this case articulated as just 'comfort'.

(b) Personal trust

Personal involvement of the doctor with the patient influences trust for a segment comprising 21% of the sample. These participants do not attach much importance to behavioural competence, comfort, simple appearance or cultural competence. Younger individuals with higher levels of education and occupational status constitute the segment that trusts the doctor based on personal involvement. There is also a significantly greater composition of urban individuals in this group. This is typically the upper social stratum of the society with good access to resources and services. The threshold for trust thus rises from just comfort, to an expectation of personal involvement and personalised care in this segment.

(c) Emotionally assessed trust

This segment of the sample comprises 45% of the respondents. They expect that the doctor shares some common traits with them such as language, religion, caste and cultural beliefs and values. They do not give much importance to behavioural competence or personal involvement. The common language apart from ease of communication also leads to a sense of social connectedness. People who are marginalised, that is, those living in rural areas, from lower socioeconomic strata belong to this segment.

(d) Objectively assessed trust

Behavioural competence is the domain defined by the behavioural aspects of the doctor–patient relationship such as communication skills, smiling face, kindness and non-discrimination. About 22% of the sample constitute this segment. The members of this segment are younger and predominantly women. Two important factors embodied in this element reflect the core ethical character of the doctor, namely, truth telling and non-discrimination.

In brief, of these categories those who trust based on comfort and have an emotionally assessed trust appear to belong to marginalised segments of the society. On the other hand, those who have personal trust belong to the higher socioeconomic status.

(ii) Health Outcomes

Our review is selective and disparate due to differences in the definition, measurement and objectives of the studies on the broad theme of trust in patient-doctor/hospital relationships.

A systematic review of the literature suggests that trust is associated with better access to and utilisation of medical care; increases the likelihood that patients recommend treatment to others and may affect the effectiveness of and adherence to treatment among patients; the quality of interactions, degree of disclosure, amount of autonomy in decision-making, continuity of care and level of engagement in behavioural change are favourably influenced; and, finally, there is some evidence that trust is associated with better self-reported health (Ozawa and Sripad, 2013).

Another interesting study focuses on trust in public versus private health care providers in rural Cambodia (Ozawal and Walker, 2011). Using the Hall et al. (2001) measure of trust, it examines the role of trust in the choice of health provider. The evidence suggests that people trust public providers for their medical skills, referral system and honest interaction with patients. Private providers are trusted for their comfortable and easy treatment at patients' homes; they allow patients to owe money if they are unable to pay at the time of seeking care.

There are other factors such as price and affordability of care, quality and availability of medicines, waiting time and receiving IV injections which determine the choice of health providers in rural Cambodia. Many of these are components of quality of care. Quality of health care alone, however, is not enough to understand people's health care decisions without understanding their relationships with trust in healthcare providers. Indeed, trust and quality of health care are closely related as they reinforce each other[6]. Besides, Cambodian villagers differentiate their care-seeking behaviour based on the severity of illness, seeking care from non-medical sector providers for minor symptoms, and from public and private providers for more serious conditions.

Tang (2011) examines whether patient's trust in medical service and patient's attitude towards health policy have significant influences on patient's overall satisfaction with medical service and sub- satisfaction in current medical experience using a sample collected in a 2008 China household survey. The analysis is based on ordered probit models to test the different correlations between patient's trust in medical service/patient's attitude towards health policy and patient's overall satisfaction with medical service /sub- satisfaction in current medical experience.

Patient's overall satisfaction with medical service and most forms of sub- satisfaction in current medical experience is significantly influenced by patient's trust in medical service/patient's attitude towards health policy; among all forms of sub- satisfaction in current medical experience, patient's trust in medical service/patient's attitude towards health policy has the largest influence on patient's satisfaction with medical costs; and the influence of patient's trust in medical service/patient's attitude towards health policy on patient's satisfaction with doctor-patient interaction and satisfaction with treatment processes are larger than the influence of patient's trust in medical service/patient's attitude towards health policy on patient's satisfaction with medical facilities and hospital environment.

Yet another contribution towards understanding the role of trust in health outcomes is Lee and Lin (2009). Its significance lies in illuminating the processes through which trust influences health outcomes. This study tests relations of trust to both objective and self-rated health. It is hypothesised that patients who trust their physicians are more likely to have stronger self-efficacy outcome expectations. This, in turn, is associated with better treatment adherence and objective health outcomes. Besides, it is hypothesised that highly trusting patients are more likely to report better health status through enhanced self-efficacy.

The analysis supports the instrumental role of trust in clinical outcomes. Further, it is found that the influence of trust on clinical outcomes is mainly indirect, through the mediating process of patient adherence. To further explore this link, cognitive factors underlying this mediating process are investigated. The analysis confirmed the motivating value of the two cognitions-self-efficacy and outcome expectations-as important antecedents of adherence.

Out of the four objective health outcomes, trust was significantly related to only one ie, the self-related HRQoL[7]. Also, trust explained more of the variance of mental HRQoL than of physical HRQoL.

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[6] An example is the adverse event following immunisation for measles in Tamil Nadu. Following the death of four children after administration of the measles vaccine, its coverage rate plummeted. This is a direct reflection of loss of trust in the public health system (Gopichandran, 2013).

[7] The objective health outcomes include: (1) diabetes-related complications; (2) body mass index (BMI); (3) glycosylated haemoglobin (HbA1C); and (4) blood lipid control, including triglycerides (TG), low-density-lipoprotein (LDL) cholesterol, and high-density lipoprotein (HDL) cholesterol. Trust has a positive association with triglycerides but minimal association with BMI and complications.

(iii) Violence Against Doctors/Hospitals

There are few insightful studies of the association between (lack of) trust and violence against doctors/hospitals. Two studies based on Chinese data are notable for their richness and analytical rigour[8].

Tucker et al. (2015) based their analysis on data collected from 7 hospitals in Guangdong Province, a part of China that recorded 25,000 medical disputes in 2013. A special feature of this study is that it brings together the perspectives of both patients and doctors.

Mistrust is rooted in strong perceptions of injustice. Patients suspect that drug and overall medical costs are inflated, and diagnostic tests and drug prescriptions are driven by maximisation of revenue.

Often patients suffering from life-threatening diseases, who turn up at the emergency department without sufficient funds, are refused critical care. Physicians' priorities of treating patients are distorted by a wide range of non-salary incentives, including all-expenses paid trips to tourist sites and conferences, direct cash payments from pharmaceutical companies based on the number of branded drugs prescribed; favours, cash and gifts as *hongbao* from patients.

At the same time, physicians also have to deal with injustices within the medical system: heavy workloads (eg, seeing 50 outpatients within a 4 hour outpatient clinic shift), pressures from within the hospital to generate revenue, low salaries, high patient expectations and sensationalist media reports. Moreover, physicians are not well-trained to deal with patient disputes.

Patient-physician mistrust erupts in anger in medical disputes resulting in three outcomes: non-resolution with patient resentment towards physicians, violent resolution and non-violent resolution. Violent resolutions include verbal abuse, threats against physicians and physical violence resulting in injuries and deaths. Some patients successfully negotiate the hospital system to broker an informal resolution and receive a sum of money. There is a strong reluctance to use legal means to resolve medical disputes, as the time taken is long.

Cracking down on violence and enhancing security measures are unlikely to fundamentally alter patient-physician mistrust and may inadvertently undermine trust (Tucker et al. 2015).

In a subsequent study, Nie et al. (2017) stresses three points: (i) patient-physician mistrust has violent consequences; (ii) mistrust is manifested in the broader social context; and (iii) the crisis of patient-physician trust is essentially a crisis of values.

Grave consequences of the mistrust include not only verbal abuse and humiliation but acts of violence directed against medical professionals by aggrieved and angry patients and their relatives.

In 2015, measures to combat "medical mobs" and attacks on medical professionals were added to the Chinese criminal law code.

A most disturbing aspect of the increasingly violent patient-doctor relationship is patients murdering health professionals. In 2016, a patient stabbed his dentist to death while demanding

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[8] Within the last decade, there has been a nearly exponential growth of the number of private hospital beds, while public hospital growth has been comparatively stagnant. The compound annual growth (CAGR) for private hospital beds is 31%, compared to 6% for public hospitals. Additionally, the number of private hospitals in China doubled to a total of 16,900 hospitals in just six years, from 2011-2017, and now account for 57.2% of Chinese hospitals.

compensation for allegedly incompetent treatment performed more than two decades earlier in Guangzhou.

Violence against medical professionals is only one manifestation of the scale of the crisis of medically related trust and the much larger crisis of social trust in general in contemporary China.

The crisis of patient–physician trust is indicative of a much wider crisis of values, social and health institutions, and social trust in Chinese society. Thus, widespread and profound patient–physician mistrust is deleterious, not just in the instrumental sense (as it leads to poor healthcare outcomes) but, more importantly, in the intrinsic sense (as it threatens basic social, ethical and existential values of humaneness, righteousness, justice). Rebuilding patient–physician trust would help to restore these values that are essential to the health of Chinese society.

Literature on the links between trust and violence against medical personnel in India is sparse and mostly descriptive but with one exception.

A study by Madhiwalla and Roya (2006) is somewhat dated but captures the essence of these links accurately.

Based on interviews with administrative staff, senior doctors, nurses, resident doctors, police stationed in the hospitals and patients in one teaching hospital in Mumbai, the authors address three issues: What are the triggers to such violence and what are the underlying conditions that give rise to these patient-provider conflicts? What are the structural and organisational factors that contribute to these conditions? What steps have been taken to reduce the current hostility towards the public health delivery system and what needs to be done? A selective summary of the evidence is given below.

Hospital staff observe that the most common trigger is a sudden death. Other triggers include denial of admission, delay in giving care, shortage of equipment and drugs during emergencies, and negligence and abuse by staff.

Resident doctors are entrusted with the difficult tasks of conveying the death of a patient to the relatives, negotiate permission for a post-mortem, and explaining what happened inside the operating theatre. When a relative starts an argument, others join the protest and frequently local leaders lead such protests. Resident doctors are not trained for these tasks, lack experience but bear the wrath of relatives, friends and mobs.

Overall deterioration in the quality of healthcare is reflected in shortages of drugs including life- saving ones, and diagnostic equipment such as X-ray and ultra sound machines. The patients have no option but to get these drugs and X-rays and ultrasound tests done outside for high prices and exorbitant fees.

Shortage of medical personnel and rampant absenteeism force junior doctors to work very long hours with little or no time for rest and sleep. The outpatient department is chaotic and overcrowded with patients pushing papers to get a doctor's attention. To make matters worse, politicians and other VIPs demand preferential treatment for their relatives and friends that Adminstrations are unable to ignore.

Almost all respondents are emphatic about improving the conditions and tactful communication with the patients. They are, however, sceptical whether the presence of more security personnel would solve the problem-especially since the attacks are spontaneous. Shortages and planning issues need to be dealt with urgently.

A more recent study (Gohil et al. 2019) draws attention to the surge in violence against medical personnel. The analysis is based on 100 respondents from a tertiary care hospital in New Delhi.

The responses are obtained from a questionnaire which has three sections: personal and workplace data, and physical and psychological workplace violence.

While comparing work experience, it is found that junior resident doctors face both physical (10.9%) and psychological violence (84.3%) more frequently than senior doctors. Verbal abuse is most common and experienced in 71.8% cases, followed by threatening in 64.8%, then bullying/mobbing in 33.8% and verbal sexual harassment in 9.9%. When asked about their opinion on the cause of incident, the most common reason reported by 80% respondents is negative media coverage, followed by poor communication which leads to conflict by 70%, dissatisfaction with doctors and nurses' work is reported by 60%, no improvement in patient's condition and presence of gang member are the responses from 50%.

Relatives of the patient are reported to be the most common perpetrators of physical and psychological violence in 80% and 57.7% of cases, respectively.

Few cases are reported to the management and police but no aggressor is prosecuted for the crime.

There is a huge gap between occurrence of violence and its reporting. The delay in reporting is largely due to ignorance of redressal mechanisms and often fear of precipitating more humiliation. No attention is given to building trust between patient-doctor.

A third study (Bhattacharya et al. 2018) traces a familiar line of investigation : patients' grievances (eg, withholding a dead body until a final settlement of bills), doctors' grievances (eg, corporate hospitals have a set protocol of how to proceed with a patient of a given disease even if a simple protocol will do), their hesitation in filing a complaint or the first information report against the accused/angry relative as the resolution is unusually slow-especially when assault cases are driven by mob violence-and workplace factors including communication barriers, political pressure and heavy workload.

No concrete solution is proposed to prevent further deterioration of patient-doctor relationship except to point out that this is the symptom of social degradation, increasing intolerance, and increasing distrust. Such facile observations are not only not helpful but obstruct the search for a solution.

5. Methodology

(i) Data

Our analysis draws upon the two rounds of the nationally representative India Human Development Survey (IHDS) data conducted in 2005 and 2012. The IHDS is conducted jointly by University of Maryland and the National Council of Applied Economic Research, New Delhi. The first round (IHDS-1) is a survey of 41,554 households in 2004–05. The second round (IHDS-II) involves re-interviews with 83% of the original households as well as split households residing within the same locality, along with an additional sample of 2,134 households[9]. The total for IHDS-II is therefore 42,152 households. The sample is spread across

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[9] An additional sample of 2134 households was added to IHDS-II urban areas to reduce the impact of high attrition on the standard errors of a few key variables. The simulations estimated that the attrition would increase standard errors to unacceptable levels if 8 out of 15 households were unreachable in each urban cluster. Hence, the interviewers were asked to report to NCAER supervisor if they were unable to recontact 5 or more households in a cluster. The supervisor verified the losses and randomly assigned households to the right, the left, or at the original location (for households that migrated) using a predefined rule. A similar addition to the rural sample was not attempted because of much lower attrition rate. (Personal communication by Sonalde Desai).

33 (now 34) states and union territories, and covers rural as well as urban areas. Throughout the analysis, the computations are based on the 2005 age-distribution and other covariates.

Repeated interviewing of the same households at two points in time facilitates a richer understanding of which households are able to partake in the fruits of growth, what allows them to move forward, and the process through which they are incorporated into or left out of a growing economy. However, this is problematic because of lack of comparability of some key variables (eg, degree of confidence in hospitals is not disaggregated by ownership in 2005: private or public, but it is in 2012).

Providers of health care are disaggregated into the following categories: (i) government doctor/nurse, (ii) government doctor/nurse in private, (iii) private doctor/nurse, (iv) chemist shop, (v) *vaidhya* (*Ayurvedic* practitioner)/hakim (*Unani* practitioner) and (vi) witchcraft. (i) and (ii) are merged into government hospitals and doctors, while the remaining categories are merged into private hospitals/doctors.

Two caveats are necessary. One is the difficulty of combining government doctors/nurses and doctors/nurses in private as many in the former group engage in private practice. A second is that, for lack of detailed data, private doctors/nurses are combined with Ayurvedic and Unani practitioners. So the disaggregation into government/public hospitals/doctors and private hospitals/doctors hides the heterogeneity within each group.

To assess the quality of medical treatment received, the respondents are asked to rank hospitals/doctors in terms of level of confidence: hardly any confidence, only some confidence and a great deal of confidence.

Other topics covered by the IHDS relevant in the present context include short-term morbidity, major morbidity (including NCDs), limitations in ADLs, health insurance, castes, assets, exposure to mass media, and demographic characteristics (e.g. gender, age, household size).

The NCDs include cataracts, high blood pressure, heart disease, type 2 diabetes, leprosy, cancer, asthma, epilepsy, and mental disorders. The number of cases of mental disorder and cancer are very small for analysis.

Disabilities in ADLs show the dependence of an individual on others, with need for assistance in daily life[10].

The (reported) disabilities include (1) difficulty walking; (2) difficulty using toilet facilities; (3) difficulty dressing; (4) difficulty with hearing; (5) difficulty speaking, (6) long sightedness/far sightedness; and (7) short sightedness.

The list of variables and their definitions are given in Table 1.

Table 1
List of Variables, Definitions and Descriptive Statistics

Label	Variable	Mean	Std. Dev	Min	Max
RECODE of CI10_1 (HQ30 21.10 Confidence: Private hospitals and doctors - to prov	r_CI10_1	1.691	0.546	0	2
RECODE of CI9_1 (HQ30 21.9 Confidence: Governmentt hospitals and doctors - to	r_CI9_1	1.415	0.680	0	2
RECODE of CI8_0 (HouseHold question pg26 19.8 Confidence: Medical)	r_CI8_0				
	Hardly an..	0.092	0.289	0	1
	Only some..	0.284	0.451	0	1
HouseHold question pg16 9.3 Health pg insurance	RC3_0				
	Yes	0.023	0.151	0	1
Quartiles Asset Index 2005 - All India	AindexAq_0				
	q2	0.249	0.433	0	1

[10] For a validation of self-reported health and morbidity, see Subramanian et al (2009).

Description	Variable	Mean	SD	Min	Max
	q3	0.267	0.442	0	1
	q4	0.236	0.424	0	1
Urban residence from census 2011	URBAN2011_1				
	urban 1	0.274	0.446	0	1
HQ3 1.13 Caste category	caste				
	General	0.258	0.437	0	1
	SC	0.229	0.420	0	1
	ST	0.085	0.279	0	1
RECODE of HHED5ADULT_0 (HouseHold question pg17 ed5 Highest adult(21+) educ)	r_HHED5ADU~0				
	Illiterate	0.235	0.424	0	1
	1-5	0.163	0.369	0	1
	11-14	0.112	0.316	0	1
	graduate	0.123	0.328	0	1
Average No. of NCDs per HH	r_ratio_NC~0				
	0 - 0.2	0.081	0.272	0	1
	0.2 - 0.25	0.027	0.162	0	1
	> 0.25	0.053	0.224	0	1
RECODE of ratio_AD_0	r_ratio_AD_0				
	0 - 0.31	0.019	0.136	0	1
	0.31 - 0.6	0.016	0.127	0	1
	> .6	0.022	0.146	0	1
HouseHold question pg25 17.1 Conflict in village	r_TR1_0				
	Yes	0.472	0.499	0	1
Proportion of 60and+ in HH 2004	ratio60AND~0	0.086	0.211	0	1
HouseHold question. pg4 Q2.6 N married women in HouseHold	NMARRIEDF_0	1.378	0.807	0	8
HouseHold question. pg4 Q2.6 N married men in HouseHold	NMARRIEDM_0	1.319	0.777	0	8
RECODE of MM1A_0 (HouseHold question pg18 11.1 Radio regular Men)	r_MM1A_0				
	Regularly	0.140	0.347	0	1
RECODE of MM1B_0 (HouseHold question pg18 11.1 Radio regular Women)	r_MM1B_0				
	Regularly	0.115	0.319	0	1
RECODE of MM2A_0 (HouseHold question pg18 11.2 Newspaper regular Men)	r_MM2A_0				
	Regularly	0.171	0.377	0	1
RECODE of MM2B_0 (HouseHold question pg18 11.2 Newspaper regular Women)	r_MM2B_0				
	Regularly	0.086	0.281	0	1
RECODE of MM3A_0 (HouseHold question pg18 11.3 TV regular Men)	r_MM3A_0				
	Regularly	0.317	0.465	0	1
RECODE of MM3B_0 (HouseHold question pg18 11.3 TV regular Women)	r_MM3B_0				
	Regularly	0.375	0.484	0	1
RECODE of social_0	r_social_0				
	1	0.179	0.383	0	1
	>1	0.169	0.375	0	1
Ratio of share of top 1% to bottom 50%	share_t1_b~0	0.462	0.121	0.2255	0.858197
Net State Domestic Product (2005)	NSDP_0	22420	9071	7914	63877

(ii) Cross-Tabulations

A broad brush treatment of trust/confidence in government hospitals/doctors and private hospitals/doctors and their covariates in 2012 is given below. Note that these comparisons are based on averages without control for confounding effects of other variables.

Comparison of Trust between Public and Private Providers of Healthcare

Although comparable estimates of confidence/trust for public and private providers of healthcare are not available for 2005, a broad comparison can be done with confidence in the aggregate of these two groups of providers. Assuming that the estimates for 2005 are a weighted average of the two groups, the confidence measure in 2012 is likely to be more susceptible to confidence in the private sector as it has grown at a much faster rate than the public sector. For the same reason, any extrapolation of the confidence to the more recent years is more likely to reflect the experience in the private provision of healthcare. However, some recent evidence points to sharp deterioration in the quality of public health care in recent years,

as a result of a rise in life expectancy and higher expectations of quality of healthcare, implying deterioration of trust[11].

At the aggregate level, nearly 65 % of the respondents show a great deal of confidence (or, high confidence) in the quality of treatment. Comparison with public providers in 2012 shows a considerable reduction in the corresponding share (about 54 %). However, the share who show high confidence in the private sector is substantially higher (over 73 %). So the combined share of those with high confidence is likely to be higher[12]. What is notable is that the majority have high confidence in the quality of healthcare in both public and private providers-especially the latter.

Comparison across asset quartiles in 2012 shows that the most affluent (i.e. in the fourth quartile) have the lowest share with high confidence and the least affluent a higher share (but still a majority) in public provision of healthcare. But there was just a slight variation in shares of those with least/hardly any confidence between the most and least affluent.

In a sharp contrast, the most affluent in 2012 show a substantially higher share with high confidence in private provision of health care than in public healthcare but slightly higher than among the least affluent. As in the case of public healthcare, the difference between the shares with hardly any confidence in private healthcare varies but only slightly between the least and most affluent.

An important marker of socio-economic status is caste. The classification used distinguishes: General/Others, Other Backward Classes (OBCs), Scheduled Castes (SCs) and Scheduled Tribes (STs). The first two are typically more affluent than SCs and STs, while the latter are not just the most deprived but also the most isolated.

Comparison for 2012 shows that the highest share with high confidence in public health care belongs to SCs (about 57 %) and the lowest to OBCs but with little difference in hardly any confidence between them.

Confidence levels in private provision present a contrast, with highest share of OBCs with high confidence (about 75 %) and lowest of STs (about 70%). There was little variation in shares with hardly any confidence among the castes.

Another important marker of socio-economic status is educational attainment. We focus on the highest educational level attained by an adult in a household. The categories used comprise: illiterates, those with primary education or less (1-5 years), with middle level and more (6-10 years), matriculates and above (11-14 years), and graduates.

Somewhat surprisingly, graduates have the lowest share with high confidence in public medical services (just above 50 %) while those with primary education or less have the highest share (above 56 %). Besides, share of graduates with hardly any confidence is highest but only slightly relative to other educational levels.

There is, however, a *reversal* in private healthcare. Graduates have highest share with high confidence (over 76 %) and those with primary education or less the lowest share (over 72 %). But there is slight variation in shares with hardly any confidence. It is likely that the reversal rflects greater awareness of quality of private health care and greater affordability among graduates.

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[11] See, for example, Nie et al. (2017), Gohil et al. (2019), Bhattacharya et al. (2018), and Almeida et al. (2017).
[12] A more definitive comparison is difficult because of mismatches between different levels of confidence in public and private hospitals/doctors.

Absence of marked difference between shares of high confidence in public healthcare facilities between rural and urban areas is indeed surprising. This is also true for shares with lowest confidence.

A similar pattern is observed for private healthcare with the important difference that shares with high confidence are markedly higher in both rural and urban areas compared with public healthcare. Besides, the shares with low confidence are markedly lower in both rural and urban areas. These findings are consistent with a strong presumption that higher cost of medical treatment (in private health care) is synonymous with better healthcare.

Does confidence in healthcare vary with prevalence of NCDs and disabilities between private and public sectors? As the unit of analysis is the household, prevalence of NCDs and disabilities are normalised by household size. What is indeed striking is that those with highest prevalence of NCDs display higher shares with high confidence in public health care than those without NCDs. But the difference is small. Moreover, there is little variation across different ranges of prevalence of NCDs with hardly any confidence.

A similar pattern is observed in private healthcare with a slightly higher share of those (households) with highest prevalence of NCDs with high confidence than those without NCDs. But these shares are above 70 % of respondents in these groups. However, the highest share belongs to those with the lowest burden of NCDs. Moreover, the shares with hardly any confidence do not vary much but are considerably lower than in public health care.

Prevalence of disabilities presents a contrast. The lowest share with high confidence in public healthcare is found among households with highest burden of disabilities and highest among those without any disability. But there is little variation in shares with hardly any confidence.

The contrast with private healthcare facilities is striking. Those with a high burden of disabilities (between 31-60 % members suffering from disabilities) have the highest share with high confidence (over 77 %) and lowest among households with no disability but still high (about 73 %). There is little variation among different ranges of disability burden with hardly any confidence but the shares are considerably lower than in public healthcare.

Media exposure is much maligned for sensationalising serious lapses in provision of healthcare in both public and private sectors. However, media exposure is a double edged sword as it has also played a key role in highlighting serious lapses (including deaths due to medical negligence and exploitative practices) in both public and private health care. Moreover, we do not know much about whether a certain form of media exposure matters more than others and whether it also varies by gender. Our cross-tabulations throw new light on these aspects of media exposure. We consider media exposure through radios, newspapers, and tv, and by gender. We also distinguish between occasional and regular exposure to these media.

Interesting contrasts emerge between different channels of media exposure. As far as public healthcare is concerned, neither regular listening regularly to radio nor reading of newspaper are associated with higher shares of respondents with high confidence, relative to no or little exposure to these media channels. This applies to both male and female respondents. However, watching tv regularly matters both among men and women. Their shares with high confidence in public health care is higher than corresponding shares of households who never or seldom watch tv.

High confidence in private healthcare varies with regular exposure to radios, newspapers and tvs. Another striking contrast is that these shares are markedly higher (above 75 %) than the corresponding shares with high confidence in public healthcare. Whether this contrast is due largely to promotional efforts of corporate hospitals needs further examination

(iii) Model Specification

As the cross-tabulations compare means without any control for confounding factors, we have used a probit specification to obtain marginal associations of an explanatory variable with an ordered dependent variable. In the probit model, the inverse standard normal distribution of the probability is modelled as a linear combination of the predictors. The **ordered probit (OP)** is a generalization of the widely used **probit** analysis to the case of more than two outcomes of an ordinal dependent variable (a dependent variable for which the potential values have a natural ordering, as in health status: bad, satisfactory or excellent).

Let us begin with a latent variable specification.

$y* = \boldsymbol{\beta}' \, x + \varepsilon$

$y*$ is unobserved. What we do observe is

y = 0 if $y* \leq 0$,

=1 if $0 < y* \leq \mu1$

= 2 if $\mu1 < y* \leq \mu2$

.

.

.

=J if $\mu j - 1 \leq y*$.

The μ' s are unknown parameters to be estimated with $\boldsymbol{\beta}$. Suppose there is a health survey to assess health status of an individual. The respondents have their own preferences which depend on certain measurable factors such as age, gender, and wealth, and some unmeasurable factors distributed independently of the observed factors, ε. The essential ingredient is the mapping from an underlying, naturally ordered preference scale to a discrete ordered observed outcome in terms of ordinal measures of health status (eg, bad, satisfactory or excellent). Given only, say, three possible answers, they choose the cell that most closely represents their preferences (Greene, 2012).

It is assumed that ε is normally distributed. The mean and variance are normalised to zero and one, respectively. With the normal distribution, the following probabilities are obtained:

Prob(y=0) =$\Phi(-\boldsymbol{\beta}'\boldsymbol{x})$,

Prob(y=1) = $\Phi(\Phi(\mu1 - \boldsymbol{\beta}'\boldsymbol{x}) - \boldsymbol{\beta}'\boldsymbol{x}) - \Phi(-\boldsymbol{\beta}'\boldsymbol{x})$,

Prob(y=2) = $\Phi(\mu2 - \boldsymbol{\beta}'\boldsymbol{x}) - \Phi(\mu1 - \boldsymbol{\beta}'\boldsymbol{x})$,

.

.

.

Prob(y=J) =1- $\Phi(\mu j - 1 - \boldsymbol{\beta}'\boldsymbol{x})$

In order for all probabilities to be positive, it must be the case

$0 < \mu1 < \mu2 \ldots \ldots \ldots < \mu j - 1$.

The marginal effects/associations are different from the ordered probit (OP) regression coefficients. Both the sign and magnitude of marginal effects/associations vary with the ordered outcome. As Greene (2012) offers a detailed account of how the marginal effects/associations are calculated, we have refrained from an exposition here. Note that in the present context, marginal effects are synonymous with marginal associations.

The Wald test examines the linear restrictions $\beta 1 = \beta 2 = \cdots . \beta j - 1$ or $H0: \beta q - \beta 1 = 0 , q = 2, . . . , J - 1$ [13].

6. Results

(i) Trust/Confidence in Government Hospitals/Doctors

A minimalist ordered probit specification in which levels of *confidence in public and private hospitals/doctors* in 2012 are regressed on just household burdens of *NCDs and disabilities* in 2005 shows that this specification is validated by the Wald test, as shown below in Table 2.

As the marginal effects are of greater analytical interest than the coefficients, these are given in Table 2 (a).It is noted from the results that there is a negative association between *hardly any confidence* in public provision of healthcare and moderate burden of *NCDs* (20-25 % prevalence of NCDs in a household), as also with *some confidence*, with the latter higher in (absolute) value. However, there is a positive association of this range of *NCDs* with the probability of *high confidence* in public provision of healthcare.

Table 2

Ordered Probit Regression of Confidence: Government Hospitals and Doctors: 2012

Number of obs	=	39,947
Wald chi2(6)	=	19.81
Prob > chi2	=	0.0030
Pseudo R2	=	0.0004
Log pseudolikelihood	=	-2.292e+08

Variables	(1) Coefficient	(2) Robust Std. Err.
Average NCD HH (2005)		
min - 0.2	-0.0464	(0.0309)
0.2 - 0.25	0.126***	(0.0453)
> 0.25	0.00544	(0.0385)
Average Disability HH (2005)		
min - 0.31	0.141***	(0.0494)
0.31 - 0.6	-0.0275	(0.0626)
>0.6	0.0435	(0.0482)
Observations	39,947	
cut1	-1.231***	(0.0118)
cut2	-0.0773***	(0.00959)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In other words, the probability of those with *hardly any confidence* is lower and lower still with *some confidence* but higher with *high confidence* among households with moderate burden of *NCDs*.

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[13] For a more detailed exposition of the diagnostics, see Greene (2012).

Table 2a

Marginal Effects / Associations Calculated from Ordered Probit Regression of Confidence: Government Hospitals and Doctors: 2012

	Outcome(1)[a]		Outcome(2)		Outcome(3)	
	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.
Average NCD HH (2005)						
min - 0.2	0.00889	(0.0061)	0.00959	(0.0063)	-0.0185	(0.0123)
0.2 - 0.25	-0.0217***	(0.0072)	-0.0281***	(0.0105)	0.0498***	(0.0177)
> 0.25	-0.00101	(0.0071)	-0.00115	(0.0082)	0.00216	(0.0153)
Average Disability HH (2005)						
min - 0.31	-0.0241***	(0.0078)	-0.0314***	(0.0115)	0.0555***	(0.0192)
0.31 - 0.6	0.00523	(0.0121)	0.00572	(0.0128)	-0.011	(0.0249)
>0.6	-0.00792	(0.0086)	-0.00935	(0.0105)	0.0173	(0.0191)
Number of Observations	39,947					

*** p<0.01, ** p<0.05, * p<0.1

a : outcome 1 denotes hardly any confidence, outcome 2 refers to some confidence, and outcome 3 is high confidence

The results for *disabilities* present a contrast. Among those households with the lowest range of *disabilities* (0-<31 %), there is a negative association with those displaying *hardly any confidence*, as also with households with *some confidence* (larger in absolute value) but a positive one with those recording *high confidence* in public provision of healthcare, relative to households without any *disability*.

In brief, moderate burden of *NCDs* and lowest range of disabilities are associated with lower probabilities of households with *hardly any confidence* or *some confidence* but higher probability of *high confidence* in public hospitals/doctors.

Let us now consider the ordered probit results from a complete specification in government hospitals/doctors given in Table 3.

The overall specification is validated by the Wald test. As before, our comments are confined to the marginal effects/associations based on the ordered probit specification, as shown in Table 3a.

Due to the absence of data on confidence in public and private hospitals/doctors in 2005, we use the combined measure of *confidence* as an explanatory variable.

Relative to *high confidence* in 2005, *hardly any confidence* has a significant positive association with *hardly any confidence* and *some confidence* but a negative association with *high confidence* in 2012. Thus those with low confidence in 2005 are more likely to show *low confidence* and *some confidence*, and less likely to show *high confidence* in 2012. This association is also strongest in (absolute) magnitude.

It is intriguing that *health insurance* is not significantly associated with any of the three *confidence levels*/outcomes.

Relative to the *least affluent* (the *first asset quartile*), households in the *second quartile* display higher probabilities of *hardly any confidence* and *some confidence* but lower probability of *high confidence*. In (absolute) magnitude, this association is strongest. The *more affluent* do not show any significant associations with *confidence* outcomes.

Relative to *rural* households, those living in *urban* areas in 2005 show positive associations with hardly any *confidence* and *some confidence* but a negative association with *high confidence*. This association is also strongest in (absolute) magnitude. Thus *urban* households are more likely to show *hardly any confidence* and *some confidence* but less likely to show *high confidence* in 2012, relative to *rural* households.

Considering caste affiliations, the *SCs* show lower probabilties of *hardly any confidence* and *some confidence* but higher probability of *high confidence*, compared with the omitted group of *OBCs*. This marginal effect/association is also strongest in (absolute) magnitude.

Two *educational* categories of adults in a household possess significant associations with *confidence* in government hospitals/doctors. Those with *11-14 years of education* are associated with higher probabilities of *hardly any confidence* and *some confidence* but lower probability of *high confidence*, relative to those with *education of 6-10 years*. Similarly, *graduates* are associated with higher probabilities of *hardly any confidence* and *some confidence* but lower probability of *high confidence*. In *both levels of education*, the strongest association in (absolute) magnitude is with *high confidence*. If longer years of education impart greater awareness of misdiagnosis and negligence in public health care, it is likely to induce scepticism and thus lower trust.

Moderate burden of *NCDs* (members suffering from NCDs/household size between 20-25 %) is associated with lower lower probabilities of *hardly any confidence* and *some confidence* but higher probability of *high confidence*. This marginal effect/association is also strongest in (absolute) magnitude.

The lowest range of *disability* burden (0-31 %) is associated with a lower probability of *hardly any confidence* but higher probability of *high confidence*, relative to those without any *disability*. The latter is also larger in (absolute) magnitude.

Conflict in a village is associated with lower probabilities of both *hardly any confidence* and *some confidence* but higher probability of *high confidence*. This is somewhat surprising as medical supplies and services are likely to be disrupted during a protracted conflict. On the other hand, saving of lives and attending to injuries are likely to inspire confidence.

Share of *aged* in a household (proportion of members 60 years or more) does not yield a significant association.

Number of *married women and men* in a household yield contrasting results. The larger the number of *married women*, the lower are the probabilities of *hardly any confidence* and *some confidence* but higher probability of *high confidence*. This marginal effect/association is also largest in (absolute) magnitude.

The larger the number of *married men*, the higher is the probability of *hardly any confidence* and *some confidence* but lower probability of *high confidence*. In (absolute) magnitude, this association is also the strongest.

Why this contrast? One conjecture is that, if *married women* are less demanding and less aggressive in their health seeking behaviour than *married men*, they are more likely to be satisfied with the medical treatment offered and thus display more confidence. Besides, women are allowed to visit a hospital/doctor only for serious ailments (eg, maternity care), their encounters with hospital staff including doctors are likely to be fewer than those of men and thus less likely to complain of negligence and mistreatment.

The role of *media* is much maligned in cases of alleged misdiagnosis and deaths, and in exaggerating shortages of drugs and diagnostic machines (eg, X-ray and ultrasound machines) but there are also cases in which media have exposed corrupt practices and revenue maximising procedures –especially in "5 star" corporate hospitals, and in raising bars of accountability. Our evidence suggests that regular listening to *radio* and reading of *newspapers* are significantly related to *confidence* outcomes. An interesting feature of our analysis is that we are able to distinguish their marginal effects /associations by *gender*. Specifically, relative to never or negligible listening to *radio*, regular listening by *men* is associated with higher probability of

hardly any confidence and *some confidence* but lower probability of *high confidence*. This association is also strongest in (absolute) magnitude. The results for *women* differ. Regular listening to *radio* is associated with lower probability of *hardly any confidence* but higher probability of *high confidence*. To what extent these differences reflect differences in programmes that they listen to requires close scrutiny.

Relative to never or negligible reading of *newspapers by men*, regular reading is associated with lower probabilities of *hardly any confidence* and *some confidence* but higher probability of *high confidence*. Much depends on what radio news channels and local newspapers cover and whether coverage of healthcare episodes is better in the latter. It is not surprising that women's confidence is immune to *newspaper* reading as for most this is a luxury that they can hardly afford given their heavy domestic chores.

Somewhat surprising is lack of a significant association of regularly watching *tv* and *confidence* in government hospitals/doctors.

Social networks comprise Mahila Mandal (women's association),self-help groups, religious groups, and caste association, among others. We do not, however, know how frequently these associations/groups meet. Broadly, *membership* of *such networks* potentially helps in multiple ways: as source of information on healthcare providers, mitigating distress to the old and other vulnerable sections, and partial financing of healthcare expenses. Which particular component dominates the *confidence outcome* is an empirical question. If, for example, the quality of public provision of healthcare is abysmal, *social networks* may discourage use of these facilities. In that case, our findings that there are positive associations between memberships of one or more *networks* and *hardly any confidence* and *some confidence* but negative association with *high confidence*, relative to *no membership*, are plausible. In both cases, the negative association with *high confidence* is strongest in (absolute) magnitude.

The overall economic environment is of considerable significance too. We have used two measures: one is *state affluence* measured in terms of *per capita state domestic product* (or SDP), and the other is the Piketty (2013) measure of *inequality* in state income distribution in terms of ratio of the share of top 1% to that of the bottom 50% in state income.

It is not surprising that *state affluence* is associated with lower probabilities of *hardly any confidence* and *some confidence* but a higher probability of *high confidence*.

Table 3

Ordered Probit Regression of Confidence: Government Hospitals and Doctors: 2012

Number of obs	=	34,961
Wald chi2(34)	=	532.59
Prob > chi2	=	0.0000
Pseudo R2	=	0.0134
Log pseudolikelihood	=	-1.968e+08

Variables	(1) Coefficient	(2) Robust Std. Err.
Confidence: Medical Services (2005)		
Hardly any confidence at all	-0.0621**	(0.0301)
Only some confidence	-0.00886	(0.0193)
Health Insurance (2005)		
Yes	-0.0581	(0.0489)
Asset Quartile - 2005		
Q2	-0.0590**	(0.0258)
Q3	-0.0339	(0.0263)
Q4	-0.0406	(0.0303)
Sector		
Urban	-0.0780***	(0.0198)
Caste		
General	-0.00206	(0.0213)

SC	0.0797***	(0.0233)
ST	0.0125	(0.0336)
Highest Education Adult (2005)		
Illiterate	-0.0113	(0.0257)
1 – 5	0.0184	(0.0271)
11 – 14	-0.0652**	(0.0284)
Graduate	-0.0866***	(0.0295)
Average NCD HH (2005)		
min - <0.2	-1.47e-05	(0.0331)
0.2 - 0.25	0.0946**	(0.0466)
> 0.25	0.00385	(0.0410)
Average Disability HH (2005)		
min - <0.31	0.0896*	(0.0543)
0.31 - 0.6	-0.0794	(0.0677)
>0.6	0.0300	(0.0495)
Conflict in village (2005)		
Yes	0.0749***	(0.0175)
Ratio of 60 and plus age group to household size.	0.0156	(0.0444)
Married women in HouseHold	0.0723***	(0.0270)
Married men in HouseHold	-0.0860***	(0.0270)
Radio regular Men (2005)		
Regularly	-0.0628*	(0.0367)
Radio regular Women (2005)		
Regularly	0.0663	(0.0403)
Newspaper regular Men (2005)		
Regularly	0.0750**	(0.0297)
Newspaper regular Women (2005)		
Regularly	-0.0494	(0.0337)
TV regular Men (2005)		
Regularly	-0.0361	(0.0284)
TV regular Women (2005)		
Regularly	-0.0169	(0.0292)
Social Network (2005)		
1	-0.113***	(0.0236)
>1	-0.145***	(0.0223)
Ratio of share of top 1% to bottom 50%	0.362***	(0.0597)
Net State Domestic Product (2005)	1.64e-05***	(1.02e-06)
Observations	34,961	
cut1	-0.805***	(0.0514)
cut2	0.380***	(0.0512)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

What is also important to note is that the positive association is strongest in (absolute) magnitude. A key explanation is that state funding of public hospitals is likely to be greater in more affluent states and likely to result in higher quality public health care and confidence. However, while all associations are significant, they are economically negligible.

Table 3a

Marginal Effects/Associations Calculated from Ordered Probit Regression of Confidence: Government Hospitals Doctors: 2012

	Outcome(1)[a]		Outcome(2)		Outcome(3)	
	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.
Confidence: Medical Services (2005)						
Hardly any confidence at all	0.0118**	(0.0059)	0.0126**	(0.0060)	-0.0243**	(0.0118)
Only some confidence	0.00163	(0.0036)	0.00184	(0.0040)	-0.00347	(0.0076)
Health Insurance (2005)						
Yes	0.0111	(0.0096)	0.0117	(0.0096)	-0.0228	(0.0192)
Asset Quartile – 2005						
Q2	0.0108**	(0.0047)	0.0123**	(0.0054)	-0.0231**	(0.0101)
Q3	0.00614	(0.0048)	0.00714	(0.0056)	-0.0133	(0.0103)
Q4	0.00737	(0.0055)	0.00851	(0.0064)	-0.0159	(0.0119)
Sector						
Urban	0.0147***	-0.00378	0.0158***	-0.00398	-0.0306***	-0.00775
Caste						
General	0.000388	(0.0040)	0.000418	(0.0043)	-0.000807	(0.0084)

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SC	-0.0143***	(0.0041)	-0.0169***	(0.0050)	0.0312***	(0.0091)
ST	-0.00233	(0.0063)	-0.00255	(0.0069)	0.00489	(0.0132)
Highest Education Adult (2005)						
Illiterate	0.00205	(0.0047)	0.00237	(0.0054)	-0.00442	(0.0101)
1 – 5	-0.00329	(0.0048)	-0.00391	(0.0058)	0.0072	(0.0106)
11 – 14	0.0122**	(0.0054)	0.0133**	(0.0057)	-0.0256**	(0.0111)
Graduate	0.0165***	(0.0058)	0.0175***	(0.0058)	-0.0340***	(0.0116)
Average NCD HH (2005)						
min - <0.2	2.73E-06	(0.0061)	3.04E-06	(0.0068)	-5.77E-06	(0.0130)
0.2 - 0.25	-0.0165**	(0.0077)	-0.0204**	(0.0104)	0.0369**	(0.0181)
> 0.25	-0.000711	(0.0076)	-0.000796	(0.0085)	0.00151	(0.0160)
Average Disability HH (2005)						
min - <0.31	-0.0157*	(0.0090)	-0.0193	(0.0121)	0.0349*	(0.0211)
0.31 - 0.6	0.0154	(0.0137)	0.0157	(0.0128)	-0.0311	(0.0266)
>0.6	-0.00545	(0.0088)	-0.0063	(0.0105)	0.0117	(0.0193)
Conflict in village (2005)						
Yes	-0.0138***	(0.0032)	-0.0155***	(0.0037)	0.0293***	(0.0069)
Ratio of 60 and plus age group to household size.	-0.00287	(0.0082)	-0.00322	(0.0092)	0.00609	(0.0174)
Married women in HouseHold	-0.0133***	(0.0050)	-0.0150***	(0.0056)	0.0283***	(0.0106)
Married men in HouseHold	0.0159***	(0.0050)	0.0178***	(0.0056)	-0.0337***	(0.0106)
Radio regular Men (2005)						
Regularly	0.0119*	(0.0072)	0.0127*	(0.0073)	-0.0246*	(0.0144)
Radio regular Women (2005)						
Regularly	-0.0119*	(0.0070)	-0.014	(0.0087)	0.0259*	(0.0157)
Newspaper regular Men (2005)						
Regularly	-0.0134***	(0.0052)	-0.0159**	(0.0064)	0.0293**	(0.0115)
Newspaper regular Women (2005)						
Regularly	0.00935	(0.0065)	0.01	(0.0067)	-0.0194	(0.0132)
TV regular Men (2005)						
Regularly	0.00672	(0.0053)	0.00743	(0.0058)	-0.0142	(0.0111)
TV regular Women (2005)						
Regularly	0.00313	(0.0054)	0.00349	(0.0060)	-0.00662	(0.0114)
Social Network (2005)						
1	0.0211***	(0.0046)	0.0231***	(0.0047)	-0.0442***	(0.0093)
>1	0.0277***	(0.0045)	0.0293***	(0.0043)	-0.0570***	(0.0087)
Ratio of share of top 1% to bottom 50%	-0.0667***	(0.0111)	-0.0748***	(0.0123)	0.142***	(0.0233)
Net State Domestic Product (2005)	-3.03e-06***	(0.0000)	-3.40e-06***	(0.0000)	6.44e-06***	(0.0000)
Number of Observations	34,961					

*** p<0.01, ** p<0.05, * p<0.1

a : outcome 1 denotes hardly any confidence, outcome 2 refers to some confidence, and outcome 3 is high confidence

Similar associations are observed for state income *inequality*. The higher the *inequality*, the lower is the probability of *hardly any confidence* and *some confidence* but higher probability of *high confidence*. One possibility is greater income tax revenue facilitating financing of public health care. Another is tax exemption of private donor funding for speciality centres/hospitals since health is a public good.

(ii) Trust/Confidence in Private Hospitals/Doctors: 2012

The overall ordered probit specification of *confidence* in private hospitals/doctors is validated by the Wald test given in Table 4. As in the previous case, our comments are confined to the marginal effects/associations given in Table 4a. All *confidence* outcome variables are for 2012 while the explanatory variables are for the base year 2005.

Some confidence in 2005 is positively associated with *low confidence* and *some confidence* but negatively with *high confidence* in private hospitals/doctors in 2012. The (absolute) magnitude is also highest for the negative association. So the probabilities of *hardly any confidence* and *some confidence* vary with the initial share of *some confidence* but are lower for *high confidence*. These results contrast with those for public health care in so far as there are similar associations but with (initial) *hardly any confidence*.

As in the previous case, *health insurance* does not yield significant associations.

In contrast to the second *asset quartile*, it is the most affluent (i.e. those in the *fourth quartile*) who display lower probabilities of *hardly any confidence* and *some confidence* but higher

probabilities of *high confidence* in private hospitals/doctors, relative to the least affluent (i.e. those in the *first quartile*). The (absolute) magnitude of the positive association is strongest. Presumably, this reflects their greater affordability of more expensive private healthcare.

Unlike confidence in public healthcare, relative to *rural* households, *urban* households do not show any significant associations with varying levels of *confidence* in private healthcare in 2012.

Relative to the *OBCs*, the *SCs* show higher probabilities of *hardly any confidence* and *some confidence* but lower probability of *high confidence*. This marginal effect/association is also strongest in (absolute) magnitude. Although the *SCs* also show significant associations with *confidence* in public healthcare but the signs differ, as there are negative associations with *hardly any confidence* and *some confidence* but a positive association with *high confidence*. As the *SCs* are relatively deprived, they are likely to have limited access to expensive private healthcare except low quality licensed private practitioners and "quacks" resulting in lower probability of *high confidence*[14].

In contrast to public hospitals/doctors where both households with *highest level of education* of *11-14 years* and *graduates* show significant associations with different levels of *confidence*, relative to those with education of *6-10 years*, only those with *11-14 years* of education display lower probabilities of *hardly any confidence* and *some confidence* but higher probability of *high confidence*. This marginal effect/association is also strongest in (absolute) magnitude. Another contrast is longer *years of education* imply greater scepticism of quality of public health care but not in private health care. How much of this difference is attributable to better awareness of quality of private healthcare of those with longer years of education can only be conjectured.

Table 4

Ordered Probit Regression of Confidence: Private Hospitals and Doctors: 2012

Number of obs	=	34,947
Wald chi2(34)	=	317.36
Prob > chi2	=	0.0000
Log pseudolikelihood	=	-1.450e+08
Pseudo R2	=	0.0099

Variables	(1) Coefficient	(2) Robust Std. Err.
Confidence: Medical Services (2005)		
Hardly any confidence at all	-0.0111	(0.0356)
Only some confidence	-0.0515**	(0.0209)
Health Insurance (2005)		
Yes	0.00537	(0.0564)
Asset Quartile - 2005		
Q2	0.0281	(0.0277)
Q3	-0.0119	(0.0286)
Q4	0.0917***	(0.0345)
Sector		
Urban	0.0129	(0.0220)
Caste		
General	-0.0355	(0.0238)
SC	-0.100***	(0.0254)

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[14] In an interesting comment, Das (2016) is emphatic that there is little difference in the quality of care provided by doctors in public clinics and informal providers. In Madhya Pradesh and West Bengal, for example, fully trained (MBBS) doctors are the worst culprits when it comes to giving unnecessary medicines and antibiotics— and even more so when they are in public-sector clinics. Given the huge concern about antibiotic resistance in India, this finding comes as a real surprise and turns the usual narrative of blame on its head. But it is not self-evident that this is a comprehensive critique and whether generalizable to other states of India.

ST	-0.0449	(0.0346)
Highest Education Adult (2005)		
Illiterate	0.00392	(0.0276)
1 - 5	-0.00284	(0.0289)
11 – 14	0.0588*	(0.0317)
Graduate	0.00304	(0.0338)
Average NCD HH (2005)		
min - 0.2	-0.0235	(0.0358)
0.2 - 0.25	-1.17e-05	(0.0542)
> 0.25	-0.0486	(0.0446)
Average Disability HH (2005)		
min - 0.31	0.0816	(0.0601)
0.31 - 0.6	0.113*	(0.0666)
>0.6	-0.00539	(0.0538)
Conflict in village (2005)		
Yes	0.0120	(0.0193)
Ratio of 60 and plus age group to household size.	0.0278	(0.0484)
Married women in HouseHold	0.0497	(0.0332)
Married men in HouseHold	-0.0198	(0.0329)
Radio regular Men (2005)		
Regularly	-0.0589	(0.0507)
Radio regular Women (2005)		
Regularly	-0.00616	(0.0534)
Newspaper regular Men (2005)		
Regularly	0.0646*	(0.0335)
Newspaper regular Women (2005)		
Regularly	-0.0158	(0.0397)
TV regular Men (2005)		
Regularly	0.0429	(0.0333)
TV regular Women (2005)		
Regularly	0.00210	(0.0342)
Social Network (2005)		
1	-0.0702***	(0.0249)
>1	-0.121***	(0.0257)
Ratio of share of top 1% to bottom 50%	-0.397***	(0.0626)
Net State Domestic Product (2005)	-1.16e-05***	(1.06e-06)
Observations	34,947	
cut1	-2.172***	(0.0574)
cut2	-1.058***	(0.0568)

Robust standard errors in parentheses. ***p<0.01, ** p<0.05, * p<0.1

Table 4a

Marginal Effects/Associations Calculated from Ordered Probit Regression of Confidence: Private Hospitals and Doctors: 2012

Confidence: Private Hospitals and Doctors (2011-12)
1._predict : Pr(r_CI10_1==0), predict(pr outcome(0))
2._predict : Pr(r_CI10_1==1), predict(pr outcome(1))
3._predict : Pr(r_CI10_1==2), predict(pr outcome(2))

	Outcome(1)		Outcome(2)		Outcome(3)	
	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.
Confidence: Medical Services (2005)						
Hardly any confidence at all	0.000972	(0.0031)	0.0026	(0.0084)	-0.00358	(0.0115)
Only some confidence	0.00467**	(0.0019)	0.0121**	(0.0049)	-0.0168**	(0.0069)
Health Insurance (2005)						
Yes	-0.000477	(0.0050)	-0.00126	(0.0133)	0.00174	(0.0183)
Asset Quartile - 2005						
Q2	-0.00255	(0.0025)	-0.00663	(0.0066)	0.00918	(0.0091)
Q3	0.00111	(0.0027)	0.00281	(0.0068)	-0.00393	(0.0095)
Q4	-0.00789***	(0.0030)	-0.0215***	(0.0081)	0.0294***	(0.0110)
Sector						
Urban	-0.00115	(0.0020)	-0.00304	(0.0052)	0.00418	(0.0071)
Caste						
General	0.00306	(0.0021)	0.00833	(0.0056)	-0.0114	(0.0076)
SC	0.00914***	(0.0024)	0.0237***	(0.0060)	-0.0328***	(0.0084)
ST	0.00391	(0.0031)	0.0106	(0.0082)	-0.0145	(0.0112)
Highest Education Adult (2005)						
Illiterate	-0.000353	(0.0025)	-0.000924	(0.0065)	0.00128	(0.0090)
1 - 5	0.000257	(0.0026)	0.00067	(0.0068)	-0.000927	(0.0094)
11 – 14	-0.00505*	(0.0027)	-0.0138*	(0.0074)	0.0188*	(0.0101)
Graduate	-0.000273	(0.0030)	-0.000716	(0.0080)	0.000989	(0.0110)

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Average NCD HH (2005)						
min - 0.2	0.00213	(0.0033)	0.00555	(0.0085)	-0.00768	(0.0117)
0.2 - 0.25	1.04E-06	(0.0048)	2.75E-06	(0.0128)	-3.79E-06	(0.0176)
> 0.25	0.00448	(0.0043)	0.0115	(0.0106)	-0.016	(0.0148)
Average Disability HH (2005)						
min - 0.31	-0.00683	(0.0047)	-0.019	(0.0139)	0.0259	(0.0186)
0.31 - 0.6	-0.00923*	(0.0049)	-0.0263*	(0.0152)	0.0356*	(0.0201)
>0.6	0.000486	(0.0049)	0.00127	(0.0127)	-0.00176	(0.0175)
Conflict in village (2005)						
Yes	-0.00107	(0.0017)	-0.00283	(0.0045)	0.0039	(0.0063)
Ratio of 60 and plus age group to household size.	-0.00248	(0.0043)	-0.00654	(0.0114)	0.00901	(0.0157)
Married women in HouseHold	-0.00444	(0.0030)	-0.0117	(0.0078)	0.0161	(0.0108)
Married men in HouseHold	0.00177	(0.0029)	0.00467	(0.0077)	-0.00644	(0.0107)
Radio regular Men (2005)						
Regularly	0.00545	(0.0049)	0.0139	(0.0120)	-0.0194	(0.0169)
Radio regular Women (2005)						
Regularly	0.000552	(0.0048)	0.00145	(0.0126)	-0.002	(0.0174)
Newspaper regular Men (2005)						
Regularly	-0.00556**	(0.0028)	-0.0152*	(0.0078)	0.0207*	(0.0106)
Newspaper regular Women (2005)						
Regularly	0.00143	(0.0036)	0.00373	(0.0094)	-0.00516	(0.0130)
TV regular Men (2005)						
Regularly	-0.00377	(0.0029)	-0.0101	(0.0078)	0.0138	(0.0107)
TV regular Women (2005)						
Regularly	-0.000187	(0.0031)	-0.000495	(0.0081)	0.000682	(0.0111)
Social Network (2005)						
1	0.00627***	(0.0023)	0.0166***	(0.0059)	-0.0228***	(0.0082)
>1	0.0113***	(0.0026)	0.0287***	(0.0061)	-0.0401***	(0.0086)
Ratio of share of top 1% to bottom 50%	0.0354***	(0.0056)	0.0934***	(0.0147)	-0.129***	(0.0203)
Net State Domestic Product (2005)	1.04e-06***	(0.0000)	2.73e-06***	(0.0000)	-3.77e-06***	(0.0000)
Number of Observations	34,947					

*** p<0.01, ** p<0.05, * p<0.1

In another contrast to public hospitals/doctors, relative to households without anybody suffering from *NCD*, varying shares of *NCD* burden do not show any significant association with different *levels of confidence*.

In contrast again to public healthcare, relative to households *without any disability*, it is households with a high burden of *disabilities* (between 31-60 %) who show negative associations with *hardly any confidence* and *some confidence* but a positive association with *high confidence* in private healthcare. Recall that it is the lowest range of *disability* burden that shows negative associations with *hardly any confidence* and *some confidence* but positive association with *high confidence* in public healthcare. If high burden of *disabilities* involves *multiple disabilities* (eg, vision and speech impairments) and private hospitals are better equipped to treat them, this contrast between public and private healthcare is plausible.

Other contrasts relate to non-significant associations of *conflict* in a village, number of *married women* and *men* with varying levels of *confidence* in private health care. As in public healthcare, proportion of *old household members* in household size is unrelated with *confidence* in private healthcare.

The results for *media exposure* differ too. Relative to not listening to *radio* or sometimes, regular listening by *men* is associated with significantly lower probabilities of *hardly any confidence* and *some confidence* but higher probability of *high c*onfidence. This marginal effect/association is also strongest in (absolute) magnitude.Unlike public healthcare, regular reading of *newspapers* is not associated with any confidence outcomes. Nor do we find any significant associations for women.

Membership of *networks* (1 or >1), relative to non-membership, yields significant and similar associations with confidence outcomes in both public and private healthcare[15]. Specifically, membership of *networks* is positively associated with *hardly any confidence* and *some confidence* but negatively with *high confidence* in private healthcare. As noted earlier, *social networks* add to the awareness of local providers of healthcare and occasionally fund healthcare costs for the poor and old. If there are shortfalls in healthcare delivery and exorbitant costs, *social networks* are likely to disseminate such information and add to the scepticism of community members about the quality of healthcare and undermine their trust.

Lastly, we consider economic environment factors at the state level: *state affluence* and *income inequality* a la Piketty (2013). Unlike public healthcare, *state affluence* is associated with higher probabilities of *hardly any confidence* and *some confidence* but lower probability of *high confidence*. This negative association is also strongest in (absolute) magnitude. However, although statistically significant, these associations are economically negligible. If *state affluence* is associated with better quality of public healthcare (through, for example, better state funding of government hospitals and clinics), it may inspire greater trust in public healthcare. At the same time, if this raises the bar for private healtcare, there may be greater mistrust in private healthcare[16].

There is a striking reversal in the associations of Piketty measure of income inequality with *confidence* outcomes in public healthcare. While *income inequality* is associated with lower probabilities of *hardly any confidence* and *some confidence* but higher probability of *high confidence* in public healthcare, the probabilities are higher of *hardly any confidence* and *some confidence* but lower probability of high confidence in private healthcare. Consider hypothetically two states in India with the same income but with higher share of the top 1 % in one state, compared with the other. In that case, the share of the bottom 50 % will be lower. Greater deprivation is likely to be associated with greater reliance on informal providers of healthcare and lower probability of *high confidence* in private healthcare. This is a plausible scenario but there may be others. So our finding of lower probability of *high confidence* in private healthcare deserves further scrutiny.

7. Discussion

Various explanations have been offered for outbursts of violence against doctors and other staff in India, drawing attention to growing supply-demand imbalance in healthcare, quality deterioration, overburdened doctors, weak security for medical staff, high expectations of patients who come in advanced stages of chronic and other illnesses, overcrowding of public hospitals with limited sanitary facilities, But underlying all these explanations is lack of trust in doctors and hospitals-especially public. Our focus here is on trust and its covariates over the period 2005-2012. The motivation stems from the fact that the existing evidence is patchy and scattered. Our aim is to build on the empirical evidence through a systematic state-of-art analysis of trust in public and private hospitals and doctors.

As emphasised earlier, trust in medical services is viewed as trust in physician and medical institutions, and involves two questions: "whether the physician and medical institutions are competent to make a diagnosis and provide treatment" and "whether the physician and medical institution will act in the best interest of the patient". Indeed, trust is inseparable from vulnerability, in that there is no need for trust in the absence of vulnerability. But, broadly, the salience of trust depends greatly on the patients' circumstances, the extent of risk,

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[15] Components of the social networks are identified on page 20. However, a data limitation is that we do not know whether membership entails regular meetings.

[16] See, for example, Almeida et al. (2017).

characteristics of their illnesses and needs and their access to information. In particular, significant variation in trust across major illnesses (breast cancer, Lyme disease and psychiatric disorder) have been observed.

Trust in a known physician has, however, different foundation than trust in a medical institution. The former is based mainly on personal experience and individual personality while the latter depends more on several other factors such as waiting time, medical facilities, and costs. However, some bases of trust are common to both objects of trust, for example, shared social understandings and role expectations. But there are interactions between trust in a physician and a hospital too. Due to possible halo effects, patients' trust in their personal physicians may influence their trust in a hospital or health plan affiliated with their physicians, or, the *reverse* may be true (i.e. institutional trust may influence individual trust).

We have measured trust in terms of confidence levels in public hospitals/doctors and private hospitals/doctors. The confidence levels are hardly any confidence, some confidence and high confidence in these institutions.

Whether trust/confidence in public and private health care rose or eroded cannot be ascertained as medical institutions in 2005 are not similarly disaggregated.

A majority of households (54 %) show high confidence in government hospitals/doctors or public provision of health care while nearly three-fourth of the respondent display high confidence in private hospitals/doctors in 2012. As both public and private health care providers display considerable heterogeneity, it is difficult to pinpoint the reason for such a glaring confidence gap.

Although there is some overlap between the covariates of (different levels of) confidence in the two sectors, there are some notable dissimilarities too.

Initial confidence levels matter but it is hardly any confidence in medical institutions in 2005 that is negatively associated with high confidence in public healthcare in 2012 while it is some confidence that is negatively associated with high confidence in private healthcare. Thus there are links between confidence levels in the aggregate in 2005 and in public and private hospitals in 2012.

Government hospitals/doctors enjoy high public confidence in urban areas while private hospitals/doctors do not, relative to rural areas. This could be a reflection of the informal private sector with a large number of practitioners of Ayurveda, Unani and other indigenous systems of medical knowledge, undermining confidence in private healthcare in urban areas.

Caste affiliation shows divergence too. Relative to the OBCs, the SCs – a deprived group-show lower probabilities of high confidence in private healthcare. One reason could be their limited access to better but expensive private healthcare. This contrasts with the finding for public health care which enjoys higher probability of high confidence among them.

Additional links between affluence measured in terms of asset quartiles and trust /confidence in these two groups of hospitals/doctors reveal an interesting contrast. Relative to the least affluent (i.e. those in the first quartile), the second quartile is associated with higher probabilities of those with hardly any confidence and some confidence but lower probability of high confidence in public provision of healthcare. In sharp contrast, the most affluent (i.e. in the fourth quartile) display lower probabilities of hardly any confidence and some confidence but higher probability of high confidence in private healthcare, relative to the least affluent. It seems plausible that the most affluent prefer expensive private medical care whose quality they trust. Thus what divides high confidence of the affluent and not- so -affluent is their affordability of good quality healthcare.

Another striking contrast is found between long years of education and trust/confidence in public and private healthcare. Both those with 11-14 years of education and graduates display higher probabilities of hardly any confidence and some confidence but lower probability of high confidence in public healthcare, relative to those with 6-10 years of education. In a sharp contrast, only those with 11-14 years of education show lower probabilities of hardly any confidence and some confidence but higher probability of high confidence in private healthcare. So it seems more education breeds scepticism of public healthcare but greater confidence in private healthcare.

Yet another striking contrast lies in associations of NCD burden and confidence levels in public and private healthcare. Moderate burden of NCDs is associated with lower probabilities of hardly any confidence and some confidence but higher probability of high confidence in public healthcare, relative to no burden. The absence of any significant association between NCDs and private healthcare is intriguing.

Although the ranges of disability burden differ in their associations with trust in public and private health care, moderate in the former and high in the latter, in both cases the associations are strongest with high confidence in (absolute) magnitude, relative to those without any disability.

That those who need good quality healthcare-segments of households who are burdened with NCDs and disabilities-express high confidence in it is of considerable policy significance.

An interesting insight is that when there is a conflict in a village-often violent and disruptive-probability of high confidence is higher in public healthcare, relative to villages without any conflict. This suggests that, despite disruption, public healthcare performs an important role in taking care of the ill, injured and in preventing deaths. This is, however, not borne out by private healthcare presumably because of its lower visibility in rural areas.

The proportion of aged household members is unrelated to confidence in both public and private hospitals/doctors.

Number of married men and women display contrasting associations with confidence in public provision of healthcare. While larger number of married women is associated with higher probability of high confidence, the opposite is the case with number of men, as the larger their number the lower is the probability of high confidence. Our conjecture is that married women's experience is limited to serious ailments and specific conditions (eg, maternity care). Combined with their less aggressive temperament and demands, they are more likely to display higher share of high confidence. As married men typically have more frequent encounters with doctors, are more demanding and impatient, they display lower shares of high confidence. No judgment is implied except to point out different attitudes to medical services expected or provided. Whether there is better streamlining of appointments and procedures, and better coordination between diagnostic tests in private healthcare (or a segment of it) may explain why such gender-wise differences are not observed.

Social networks act as potential sources of information about healthcare, providers of physical, emotional and financial support, and help ensure access of the old and sick to doctors/hospitals. Lacking data on these specific roles, we are unable to assess their contribution and forced to examine the association between membership of networks and confidence in public and private healthcare. Whether a household is a member of one or more social networks (eg, self-help group), the membership is associated with higher probabilities of hardly any confidence and some confidence but lower probability of high confidence, relative to non-member households. Surprisingly, this pattern is similar for both public and private healthcare. It seems likely that

the role of social networks as a source of information on medical malpractices dampens high confidence in both sectors of healthcare.

The much maligned role of mass media in sensationalising malpractices and deaths in hospitals and provoking mass hysteria and protests against hospitals/doctors is often taken at face value. Our analysis breaks new ground by disaggregating mass media into radios, newspapers and tvs, and exposure to them by gender. The role of mass media is, however, mixed. Regular listening to radio by women exhibits a significant association with higher probability of high confidence in public provision of healthcare, relative to never or once in a while listening. In sharp contrast, regular listening by men is associated with lower probability of households with high confidence. Clues may lie in types of programmes men and women listen to. Another contrast is that neither association is significant with respect to private healthcare.

Regular reading of newspapers by men shows lower probabilities of hardly any confidence and some confidence but higher probability of high confidence. Similar associations are observed with respect to private healthcare.

The important point is that, while sensationalisation by mass media of medical malpractices and charging of exorbitant fees cannot be ruled out, our analysis points to a significant role of media in building public confidence in healthcare provision.

The overall economic environment is important too. One measure is state affluence measured in terms of state per capita income. As health care is a *state* subject (with large central government funding), higher state income facilitates higher health expenditure on healthcare (Joumard and Kumar, 2014). It is therefore not surprising that states with higher incomes show higher probability of high confidence in public healthcare. Although this relationship is significant, it lacks economic significance because of the negligible magnitude.

A reversal is found in the association between state affluence and high confidence in private health care i.e. the more affluent a state is, the lower is the probability of high confidence. One explanation is that if better state funding of public healthcare results in quality improvement, it is likely that confidence will be higher in it. However, if as a result of improvement in public healthcare quality there is an improvement in private healthcare, as demonstrated by Almeida et al. (2017), our explanation is undermined.

State income inequality measured a la Piketty as the ratio of share of income of the top 1 % to share of income of the bottom 50 % shows a striking contrast between public and private health care. In the former, the higher the income inequality, the higher is the probability of high confidence in public healthcare. Our conjecture is that the rich donate large sums to speciality centres in government hospitals and promote research through generous grants for deadly diseases. This is further encouraged by tax concessions. Private healthcare, by contrast, displays a different pattern. There is a reversal in so far as states with higher income inequality display lower probability of households with high confidence in private healthcare. As pointed out in the previous section, one explanation is that if higher inequality implies a lower share of the bottom 50 % in state income, there will be more deprived households who are unable to afford expensive but better quality healthcare in private hospitals. If they are dissatisfied with public healthcare, they are likely to turn to the large informal sector of quacks, unlicensed doctors, registered medical practitioners with limited skills and expertise. Hence such households are more likely to remain sceptical of private healthcare.

Even though the present study rests on the premise that there is a fundamental link between lack of trust and violent attacks on hospitals/doctors, supported by a few influential studies by Tucker et al. (2015) and Nie et al.(2017) demonstrating that patient-physician mistrust has violent consequences in China, we are unable to corroborate it as we lack more recent data on

trust in doctors/hospitals and violence against them. Evidence on India remains sparse except for a few insightful case studies. The most common trigger is a sudden death. Other triggers include denial of admission, delay in giving care, shortage of equipments and drugs during emergencies, and negligence and abuse by staff. So there are two major limitations: one is that we do not know whether there has been erosion of trust in health care in more recent years, and, second, we do not know how robust is the link between mistrust and violence.

Another limitation is that IHDS does not provide any data on what goes on inside public and private hospitals. For example, it will be helpful to know the waiting period per patient, time given for consultation, fee structure, facilities in waiting area, gap between consultation and diagnostic tests, and availability of drugs. We also need to know the injustices within the medical system: overload of junior doctors, their inability to deal with angry patients, and lack of coordination between departments. In the absence of such data, processes underlying patient-doctor trust or mistrust cannot be examined.

8. Concluding Observations

Our analysis has demonstrated that personal circumstances such as socio-economic deprivation reflected in the caste hierarchy, wealth, whether living in rural or urban areas, high level of education, whether suffering from a NCD and/or a disability, married women and men, mass media, whether affiliated to a social network, and overall economic environment reflected in state affluence and income inequality are associated with high confidence/trust in government hospitals/doctors and private hospitals/doctors one way or the other.

Although health is a state subject, there is substantial infusion of funds by the Central government through, for example, Ayushman Bharat and other national health mission. The 2019-20 Central Government budget allocation for health, however, is a measly 0.34 % of India's GDP. Given the rapid deterioration in the quality of public healthcare and rising life expectancy and expectations of good quality health care, the supply –demand imbalance is likely to widen sharply. So the first priority is to hike substantially expenditure on health. But more important than higher financial allocation is reorganisation of the health care system and effective regulation. As argued emphatically by Patel et al. (2015), it is imperative to develop a fully integrated population- based healthcare system that brings together the public and private sectors and the allopathic and indigenous systems, and is well-coordinated at different levels of service delivery platforms-primary, secondary and tertiary. It should address acute and chronic healthcare needs, offer accessible, good quality healthcare choices, and be cashless at the point of service delivery. The primary healthcare provider should be a strengthened public care system with a clearly defined role of the private system, especially in specialised services. Moreover, Patel et al. (2015) propose a shift from a standard health insurance model to an entitlement-based model. This will require that the plethora of insurance schemes and vertical programmes are integrated into a national assurance fund, Ayushman Bharat is a partial response. Its weaknesses are (i) neglect of primary health care and focus on secondary and tertiary healthcare; and (ii) uncertainty about its funding.

Insufficient reach of the public sector is instrumental in a rapid growth of the unregulated private sector-the informal sector. Private practitioners are thus the first point of contact in both rural and urban areas for many ailments, including fevers and acute illnesses. However, a large proportion of private practitioners are unqualified or underqualified. At the other extreme are corporate hospitals equipped with facilities as good as any globally, and beneficiaries of subsidised land and tax exemptions. Unfortunately, overbilling and unnecessary prescriptions, procedures, and diagnostics are their trademark.

Important regulatory laws have been passed in the last decade such as the 2010 Clinical Establishment Act, which provides for the registration and regulation of clinical establishments and prescribes minimum standards of facilities and services provided by them. By December 2018, only 11 states and all Union territories except Delhi had adopted it. The Mental Care Act, 2017, seeks to protect the rights of a person with mental illness, and thereby facilitates his/her access to treatment and by an advance directive; and how he/she wants to be treated for his/her illness. But mental health disorders, say, depression, are largely unreported because of the stigma attached to them and their ostracisation. Long awaited Medical Devices Regulation Bill became an ACT in 2018. Their enforcement remains feeble, informal medical sector continues to flourish, and corruption and malpractices remain unchecked. Thus the case for greater transparency and accountability is indisputable in building trust between patient-doctor/hospitals.

An important point in the present context, as emphasised by Tucker et al. 2017 in their study of patient-physician mistrust and violence in China, is to shift the focus from preventing violence against physicians to restoring patient-physician trust. Indeed, cracking down on violence and enhancing security measures are unlikely to fundamentally alter patient-doctor/hospital mistrust.

An important suggestion of Tucker et al. (2017) is that medical education would benefit from greater attention to the humanities, including clinical training focused on patient-physician communication, ethics, professionalism and dispute resolution. The recent constitution of the National Medical Commission (NMC), replacing the Medical Council of India (MCI), is now responsible for the future course of medical education and medical ethics. Unfortunately, early indications are that NMC is unlikely to perform any better than its predecessor which was rife with corruption. Besides, patients and families who are victims of the medical system should be willing to negotiate and seek non-violent solutions. At the same time, physicians and hospital administrators must take the initiative to act as moral agents in order to rebuild patient-doctor trust.

If our analysis has any validity, the much maligned role of mass media in spreading rumours, sensationalising misdiagnoses and ascribing deaths in critical cases to negligence in medical care needs correction. We find that different media channels have favourable effects on confidence in healthcare.

Another finding that deprived households show high confidence in public healthcare suggests that if they have easier access to superior health care, as suggested in our sketch of the integrated healthcare system that allows free choice between different providers, their trust is likely to be enhanced.

Yet another important finding is that vulnerability to NCDs and disabilities is associated with high confidence in public healthcare. In the integrated model of healthcare, there is a clearly defined role of the private sector in provision of specialised medical services. This also has the potential of enhancing patient-doctor/hospital trust.

In conclusion, although there are many daunting challenges to building patient-doctor/ hospital trust, the evidence suggests that these are not insurmountable.

References

Almeida, R., J. Benrey, J. Freimark, M. Houck, L. Liu, M. Messing, A. Tan, A. L.Weiss (2017) "The Role of Government in the Indian Hospital System", Woodrow Wilson School Graduate Policy Workshop Report, Princeton.

Bhattacharya, S., K. Kaushal, A. Singh (2018) "Medical violence (Yi Nao Phenomenon): Its past, present, and future". *CHRISMED J Health Res*; vol. 5:259-63.

Das, J. (2016) "Of quacks and crooks: The conundrum of informal health care in India", *Future Development*, October 24.

Dhillon, A. (2019) "Doctors in India strike over violent attacks by patients' families", *The Guardian*, 17 June.

Gohil R.K., P.K. Singh, N. Saxena, G.Patel (2019) "Work place violence against resident doctors of a tertiary care hospital in Delhi, India". *Int Surg J*;6:975-81.

Gopichandran, V. (2013) "Trust in Healthcare: An Evolving Concept", *Indian Journal of Medical Ethics* Vol X No 2 April-June.

Gopichandran V, and Chetlapalli S.K. (2013) "Factors influencing trust in doctors: a community segmentation strategy for quality improvement in healthcare", *BMJ* Open 3:e004115. doi:10.1136/bmjopen-2013- 004115.

Greene, W.H. (2012) *Econometric Analysis*, Fifth Edition, Prentice Hall, New Jersey.

Hall, M.A., E. Dugan, B. Zheng and A. K. Mishra (2001) "Trust in Physicians and Medical Institutions: What Is It, Can It Be Measured, and Does It Matter?" *The Milbank Quarterly*, Vol. 79, No. 4, pp. 613-639.

Joumard, I and A. Kumar (2014) "Improving Health Outcomes and Healthcare in India", Economics Department Working Papers No. 1184, OECD, Paris.

Kane, S. and Calnan, M (2016) "Erosion of trust in the medical profession in India; the time for doctors to act". *International Journal of health policy and management doi10.15171/ijhpm.2016.143*

Kar, S. P. (2017) "Addressing underlying causes of violence against doctors in India", *The Lancet*, May 5.

Lee, Yin-Yang, J. L. Lin (2009) "The effects of trust in physician on self-efficacy, adherence and diabetes outcomes", *Social Science & Medicine* 68, 1060–1068.

N. Madhiwalla, and N. Roya (2006) "Assaults on public hospital staff by patients and their relatives: an inquiry", *Indian Journal of Medical Ethics* Vol III No 2 April-June.

Mechanic, D., and S. Meyer (2000) "Concepts of trust among patients with serious illness", Social Science & Medicine, vol. 51, no. 5, 1 September, pp 657-668.

Nie, Jing-Bao, L. Li, G. Gillett, J. D. Tucker, and A. Kleinman (2017) "The Crisis of Patient-Physician Trust and Bioethics: Lessons and Inspirations from China." *Developing World Bioethics,* September 18. Portico. doi:10.1111/dewb.12169.

Ozawa, S., and P. Sripad (2013) "How do you measure trust in the health system? A systematic review of the literature", *Social Science & Medicine* vol. 91, pp. 10-14.

Ozawal, S, and D. G Walker (2011) "Comparison of trust in public vs private health care providers in rural Cambodia**",** *Health Policy and Planning* vol.26:i20–i29**.**

Patel, V., R. Parikh, S. Nandraj, P. Balasubramaniam, K. Narayan, V. K Paul, A. K. Shiva Kumar, M. Chatterjee, K. Srinath Reddy *(2015)*, "Assuring health coverage for all in India", *Lancet; 386: 2422–35.*

Piketty, T. (2013) *Capital in the Twenty-First Century*, Harvard University Press, Cambridge, MA.

Sachan, D. (2019) "Indian doctors' leaders demand national law to reduce violence in hospitals", *BMJ*, 19 June.

Sharma, D. (2017) "Rising violence against health workers in India", *Lancet*, Vol 389 April 29.

Subramanian, S.V., M. A. Subramanyam, S.Selvaraj, and I. Kawachi (2009) "Are self-reports of health and morbidities in developing countries misleading? Evidence from India", Social Science Medicine. Jan; 68(2): 260–265.

Tang, L. (2011) "The influences of patient's trust in medical service and attitude towards health policy on patient's overall satisfaction with medical service and sub satisfaction in China", , *BMC Public Health*, vol.11:472.

Tucker J.D., Y. Cheng, B .Wong, et al. (2015) "Patient– physician mistrust and violence against physicians in Guangdong Province, China: a qualitative study". *BMJ Open* vol.5:e008221. doi:10.1136/bmjopen-2015.