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Connecting Pills and People:

An Ethnography of the Pharmaceutical Nexus in Odisha, India

This article explores the impact of intensive competition within the pharmaceutical industry and among private providers on health care in an Indian city. In-depth interviewing and clinical observation were used over a period of 18 months. Private practitioners and chemists who provided regular services to inhabitants of a poor neighborhood in central Bhubaneswar were included. Fierce competition in private health in Odisha, India, reduced quality of care for the poor. The pharmaceutical industry exploited weak links in the health system to push drugs aggressively, including through illegal channels. The private health market is organized in small "network molecules" that maximize profit at the cost of health. The large private share of health care in India and stiff competition are detrimental for primary care in urban India. Free government services are urgently needed and a planned health insurance scheme should be linked to quality control measures. [India, pharmaceutical industry, private practitioners, retail pharmacies, private health care sector]

In recent decades, the private health care sector has received increasing attention by policy makers in countries worldwide. The policy-level promotion of the private health care sector as a corollary to both perceived and documented shortcomings of the government sector was initiated by the World Bank and a number of bilateral donor agencies in the late 1980s, even if only a few studies had analyzed the private health care sector at the time. The goal was to downsize the government sector based on the perception that "state-led development strategies [had] left a legacy of bloated bureaucracies and overstaffed public enterprises" (Rama 1999:1). The past two decades have witnessed a dramatic growth in the private health care sector, in line with such policies (Bond and Dor 2003:16) but also because of the opening of new markets for a globalized economy where health care constitutes a highly profitable domain. In India, the growth of the private sector has been the result of the process of liberalization, rather than the result of a deliberate state policy (Rao et al. 2005:89). In terms of health provision, urban India is characterized by a lack of access to services at the primary care level (Barua et al. 2009:30). For the population as a whole, 82 percent of outpatient care (Government of India [GOI] 2002:94–95) is provided by a largely unregulated private sector (GOI 2008:67). This figure represents a dramatic increase since independence in 1947, where the private share was assessed to be 5–10 percent (Sengupta and Nundy 2005:1158).

In this scenario, the notion of "health care system" may have little analytical value from an anthropological point of view. A number of recent studies describe a "pharmaceutical nexus," not least (but not only) in countries with insufficient access to functioning and free government services (Kamat and Nichter 1997, 1998; Kamat and Nyato 2010; Petryna et al. 2006). Following Petryna and colleagues, the "idea of a nexus is meant to capture a broad set of political and social transitions that fall under and to some extent happen through the globalization of pharmaceuticals" (2006:21). The present article builds on the concept of *pharmaceutical nexus* in an exploration of exchanges, priorities, and practices that enable the pharmaceutical industry to overdetermine therapeutic encounters for a large number of patients. Private profit-seeking colludes with public sector regulatory institutions in ways that create patterns of underdiagnosis and overtreatment in a fiercely competitive context. The article argues that competition in a private health care market leads to a poor quality of services when it is not sufficiently and effectively controlled by the state in terms of the quality of drugs at production and distribution levels and in terms of a regulatory framework for marketing pharmaceuticals. The argument is based on an unpacking of the local pharmaceutical nexus in Bhubaneswar, the capital of Odisha, India. The notion of *pharmaceutical nexus* is disaggregated to unfold "molecular networks" at the local level and expanded by including the workings of the state as a necessary actor in the nexus.

Access to Health Care Services in Bhubaneswar, Odisha

Odisha, with a total population of approximately 37 million (Census of India 2001), is one of the poorest states in India despite its rich natural resources. The rate of urbanization is slower compared to many other Indian states, when seen as a ratio between urban and rural populations, but urban growth in some cities is very fast and Bhubaneswar is a case in point. After it became state capital at the time of independence, it has grown 17-fold over 40 years, from 38,200 in 1961 to 657,000 in 2001 (Census of India 2001). Infrastructure, including health infrastructure, has not been developed to keep up with this growth. Defining the city center as within a radius of eight kilometers and the periphery as more than eight kilometers from the center, the vast majority of both government health facilities and registered private practitioners with formal qualifications are located in the inner circle even though the population size of the two areas is similar.

The main government presence is seen at the tertiary health care level with Capital Hospital being the main point of reference. The hospital serves as referral point for most other primary- and secondary-level service providers in the city. Private hospitals are relatively few compared to other urban centers in India. Only 11 percent of admissions in Odisha are in private hospitals, compared to the national figure of 50 percent (GOI 2002:96). The city has a number of private and corporate sector hospitals, some of which also accept poor patients for out patient services. Yet, for the poor, the main importance of the private sector in Bhubaneswar is at secondary and primary care levels, with predominantly private-for-profit structures (Gupta 2002:22). Medically qualified private practitioners tend to be hospital-employed specialists with private clinics in the city center. Chemist shops exist in abundance and often function as de facto primary care units. In addition, there are many

private homeopathic and Ayurvedic clinics. Although the structure of the health care system is not balanced, access as measured by distance to health providers is not a problem in central Bhubaneswar. In comparison, in the periphery of the city, the health system is populated by chemists and private practitioners without formal medical qualifications, whereas medical doctors are far between.

Methods

The present study used ethnographic methods including in-depth interviewing with practitioners and patients as well as observation in clinics and home visits to patients. A poor neighborhood (*basti*) in the inner city was initially selected on the basis of location, size, and preliminary focus group discussions with inhabitants. A household survey was conducted with a random sample of 200 households. Randomization was conducted by inviting every third household to participate until a number of 200 households had been reached. Twenty-five households were identified for follow-up through repeated in-depth interviewing over 18 months during 2004–06.[1] A patient-based approach to sampling of private practitioners was adopted to include only those who were regularly consulted by inhabitants in the basti. From the household data, a total of 49 practitioners were identified. Out of these, 20 practitioners were included in the ethnographic study, ensuring (a) participation of the most popular practitioners, and (b) representation among all types of practitioners consulted. One doctor refused to participate. A compensation for lost work time of INR500 was paid per interview cum observation. Interviewing and observation were often interspersed so that interviewing would take place whenever there were no patients in the clinic. A total of 110 data files with field notes and transcripts of interviews with the 20 private providers were generated over 18 months. The mean period of presence of the researcher in the clinic for observation and interviewing was 69 minutes, resulting in a total clinical interaction time of more than 126 hours. Although a team of one male and three female research assistants were involved in data collection, data was subsequently coded and analyzed by the author, using Nvivo (ver. 8) software.

The patient-based approach to identification of private practitioners was chosen as a consequence of the replacement of "health care system" with "pharmaceutical nexus" and based on inspiration from Actor-Network Theory. The intention was to explore what the "system" looked like, if it was not assumed to exist normatively but had to be constructed by following the actors (Latour 2005), including nonhuman actors such as medicines and money. This resulted in a heterogeneous group of practitioners, and the analysis presented here is limited to the biomedical domain. By following the actors, the research team was led to key informants such as medical representatives and government health officials who were subsequently included.

The project was carried out in collaboration with All India Institute of Medical Sciences and was cleared by its ethical review board as per standard procedures. For ethical reasons, the identity of participants has been concealed.

The Pharmaceutical Industry

The pharmaceutical industry contributes to India's new status as an upcoming global economy with an average compounded growth rate of 15.9 percent between

1994–95 and 2000–01 and an industry worth $5.7 billion in 2001 (Chittoor et al. 2008:257). This growth was initiated by the exemption in the 1970 Act on Patent of certain areas, including pharmaceuticals, from paying for licenses and royalties, thereby giving the industry access to reformulation and production of the newest drugs at a fraction of the international market price. The industry is quite heterogeneous and fragmented and covers multinational companies' production facilities in India, large Indian companies like Ranbaxy and CIPLA that initially specialized in generic products, and comparatively small production facilities that cater to local markets. According to Greene (2007:4), there were more than 20,000 pharmaceutical production units in India in 2005, representing an almost tenfold increase compared to 1970. This expansion has led to a global position as the world's fifth largest producer of bulk drugs. The implied increase in competition is compounded by India's decision to comply with TRIPS regulations in 2005, thereby stopping production of patented drugs in conflict with international patent regulations and directing the industry toward production and export of generic drugs (Greene 2007:4). The Mashelkar Commission that scrutinized the drug control situation in India found 5,877 companies with drug manufacturing licenses from the Indian government. The commission acknowledged the existence of substandard and spurious drugs that may either be illegal copies of patent-protected drugs or drugs with adulteration or no active component, albeit at a much lower level than estimated by WHO (Mashelkar 2003:75). Spurious drugs are manufactured with a criminal intent and do not contain the appropriate active component and hence can jeopardize the health and life of patients, whereas the category of counterfeit drugs is larger and also covers drugs that for example contain the appropriate active component but are mislabeled in terms of branding, expiry date, et cetera. The extent of spurious and counterfeit drugs in India is unknown. Although the GOI has found in a survey that approximately ten percent of drugs sold were substandard, and less than one percent was spurious (Mashelkar 2003:Annexure 9), informed guesses estimating the proportion of counterfeit anti-infectives at 13–30 percent of the market have been published in *Far Eastern Economic Review, Outlook,* and *India Today* and have found their way into the scientific literature (Gautam et al. 2009:252; Newton et al. 2006).

Protection of Local Pharmaceutical Industry

With many of the companies producing a small number of similar generic drugs, the industry is "characterized by fierce competition and high volumes, razor-thin profit margins, overcapacity, and declining prices" (Greene 2007:9). In this environment, it may be easier for local industries to lobby with state governments to put protective mechanisms in place. In Odisha, the state government has approved an essential drug list in accordance with WHO recommendations and local morbidity patterns. This list contains 290 drugs that must be available in appropriate quantities at relevant levels in the Government Health System (Government of Orissa [GOO] 2006).[2] However, according to a senior health officer, the local pharmaceutical industry, represented by Utkal Pharmaceuticals Manufactures Association, has successfully negotiated with the Directorate of Export Promotion and Marketing, that 31 of the 290 drugs be earmarked for procurement through local pharmaceutical companies.

This is reflected in the state's Drug Management Policy, which under section 5.1. states that "certain drugs and medical consumables are earmarked by the State Government for purchase from approved local S.S.I. Units of Orissa" (GOO 2003:5), S.S.I. being small-scale industries. These 31 drugs are so-called "fast-moving" drugs, which are medicines in high demand. They can be relatively easily produced and include Paracetamol and Ibuprofen, antibiotics such as Doxycycline, Tetracycline, and amoebicides like Metronidazole.

Quality control

The intention to support local pharmaceutical industry may or may not be sound from an "export promotion and marketing" perspective, but it is not necessarily sound from a drug quality perspective. The State Drug Controller issued the licenses to local companies to allow them to produce medicines, while the Finance Department decided which local companies were selected for production of earmarked drugs and issued attractive contracts outside open competition. In addition, local small-scale industries were favored in government tenders with a margin of five percent. Being local companies, they also did not have to pay state tax. This gave them a profit margin of an extra nine percent compared to outside companies that operated in Odisha.

Senior health officials were critical of the performance of the Drug Control Office but were reluctant to voice their concerns publicly.

> *Health officer*: I have asked the small-scale industries, how do you get a license? . . . [They say]: "No, sir, it's easy. . . . You go to the drug control office, they have a system. You fill out the forms and you do whatever you like . . . and you get the license at the right time." So this licensing system, there must be some change in this licensing system.
> *Jens*: Right.
> *HO*: Someone should go and visit the factory [to check], whether they have the machinery or not, whether they have the technical know-how or not. They don't have technical know-how, I tell you. When we first did the testing, I see . . . Suppose one Paracetamol tablet should be 500 milligrams; and if you see as per the Indian Pharmacopoeia, it can be ± ten percent or something. So for someone having 90–91 percent it is also good quality. If someone is having 104 percent it's good quality, but the variation should not be more than that. So, firstly, we are getting substandard so far as assay is concerned. If you see a 500 milligrams tablet, hardly you will find 200–300 (milligrams Paracetamol).

The fact that, at the time of data collection, the drug controller unit was understaffed with only 17 controllers to cover 30 districts (*Hindu* 2008a) did not help to improve the situation, but the ease with which licenses could be obtained for manufacturers, wholesalers, and retailers to produce and sell pharmaceuticals was also a cause of concern. Health providers in the present study considered the drug control system in Odisha to be approachable for informal deals whenever irregularities were identified. This finding was supported by news reports in August 2007

that a spurious medicine manufacturing unit was busted in Odisha's Bolangir district and fake drugs worth over INR10 million ($247,400 in 2007) were seized. An angry crowd attacked at least 15 medicine shops (*Telegraph* 2007). Bolangir drug inspector T. V. Rao was suspended and subsequently indicted for his alleged role in the circulation of fake medicines (Oneindia 2007). As the news spread, many wholesalers and retailers were reported to dump spurious drugs in rivers and canals (Das 2007).

By January 2008, the Odisha High Court "observed that 'Orissa has become a dumping ground of fake medicines'" and instructed the State Drug Controller to check entry of fake drugs from outside the state (*Hindu* 2008b). Immediately following the Bolangir case, between July 2007 and March 2008, the drug control department had conducted 1,677 raids, collected 4,350 samples, and identified 131 spurious drugs including morphine, anti–snake venom, and cancer drugs, but the activity decreased to 110 raids and 253 samples during April to December 2008, and no samples had been collected in the first two months of 2009 (*Telegraph* 2009).

Management of Substandard Drugs

Although unstable drug control may contribute to making Odisha an attractive marketplace for spurious and counterfeit drugs, poor quality of care is not only a question of control. The fierce competition between companies has led to unscrupulous pursuit of marginal profits. According to a chemist in our study, who had been working with the pharmaceutical industry as a wholesaler for many years, substandard drugs from local production facilities would be offered at 50 percent of the standard price and sold through informal channels without product guarantee. It would then be up to the practitioner (or chemist) to assess the risk involved in using it:

> The company has given 50 percent [of a given drug] for promotions and another 50 percent on the side. This 50 percent he gives to the distributor directly. The distributor . . . comes to the shop and says "if you [normally] purchase this product for one Rupiah, now you will purchase the same thing for half the price. But . . . you won't get the same guarantee with this one." Substandard means there may be some problem in its production or in the technicalities. They are saying that it has no guarantee. That means they have no confidence in them. Maybe some fault lies with them. . . . You are giving Nimesulide [Nonsteroidal anti-inflammatory drug] for two Rupees there. Now you are giving the same for one Rupiah here. . . . In case of operations, while the doctor writes the former Nimesulide without any objection, he is hesitating to write the latter medicine. Why? Because, if the wound doesn't recover or the pain is not reduced he'll be in trouble. If it's a general thing like a cold or a cough, then it's ok. But in the case of surgery, it will be complicated. [Chemist, male, 47]

The idea that substandard quality of drugs is acceptable if not used in surgery or under perceived life-threatening circumstances is certainly problematic; it is easy

to see that patients face health hazards and private practitioners run a risk of jeopardizing business when they engage with new drugs and new drug companies. It is the job of the medical representative to overcome this skepticism.

Medical Representatives

A medical representative (MR) is a sales agent who promotes drugs for a pharmaceutical company to direct or indirect outlets—prescribing doctors, chemists, or nonqualified practitioners (frequently referred to as "quacks" by medical doctors). Different practitioners are targeted in different ways with different drugs. Government doctors with private practice on the side are especially attractive because of the large patient turnover. A popular doctor may see around 50 MRs in a day. The MRs have to be very quick in delivering effective messages, even if marketing is often presented as medical education. The following extract from field notes serves as an example.

> I am sitting in the consultation room of Dr S., waiting for him to get ready for an interview. Before I get a chance to initiate the interview, two MRs from CIPLA come into the room. Because they are eager to jump the queue to save their own time, they ignore me and begin to introduce their product. One of the MRs takes out a flip book and presents a "lightening speech" to the doctor. The style of presenting is so fast that the individual words are difficult to distinguish. The MR reassures Dr S. that he will only talk about one product [i.e., not take up much time]; then he describes its molecular structure and the different forms and dosages it is available in. His medical chanting is supported by the flip book that he flips at the same ferocious speed that he is talking, but Dr. S. seems to get the meaning. The presentation lasts exactly 57 seconds, at the end of which he says: "And today's request, only ONE brand, Sir, and don't request ANY [other] product, Sir. Don't write any [other] product, Sir. My request for today, Sir: 'I need PENCIP [an antibiotic] and PENCIP as such.' Only one product, Sir." Dr. S. says yes and indicates that he expects something for his time. The MR who had been talking fishes a deodorant spray from his bag and gives it to his otherwise passive colleague who hands it over to Dr. S., who smiles and sprays it all over his shirt. It is a hot day. The MRs take leave.

The above interaction is one of numerous visits we observed during our observation sessions in private clinics. For Dr. S., it was part of a daily routine. He would have around 30 such visits at the corporate hospital and another ten to 20 in his private practice at home. This volume of visits by MRs was quite common among the medical doctors participating in the study.

Aggressive marketing is not limited to "Western" medicine. Mr. M. had worked for an Ayurvedic drug company for eight years.[3] His company had three modes of marketing drugs: "Over the Counter (OTC)," "generic," and "ethical." He explained: "Ethical division means that the medical representatives carry the bags with samples and visual aids, and ... show the visual aids to the doctors to motivate them to write the products." The "generic" division, on the other hand, targets

chemists: "they only . . . practice the products . . . only pushing. Pushing the products . . . through the chemist. That is called generic."

Mr. M., however, worked in the OTC section. Normally, *OTC* is a label for medicine that may be purchased "over the counter" without a prescription. However, in this case, *OTC* named a sales strategy whereby MRs would directly sell company products to practitioners. The MR would say: "So these are my products, this is (names of four medicines). So our rate is this much and your profit margin is 20 percent or 30 percent and your gift is this one, so please write my products." Above, we saw the modest gift of a deodorant change hands. In addition to lucrative profit margins, Mr. M. had also more substantial incentives at his disposal and listed items such as blankets and double bed sheets with a pillow cover. Doctors, who prescribe for larger sums, are invited on trips to attractive holiday sites like hill stations in the Himalayas or beach resorts in Goa. Such sales only come about if the MRs visit the practitioners very often, because, as Mr. M. repeatedly stated, the market is "very competitive." The strategy of multiple visits partially explains the avalanche of MRs that target each practitioner. It becomes even clearer when we learn that the three divisions only differ in their marketing while in fact they sell identical drugs from the same company but with different labels and names.

Although M. presented his company as Ayurvedic, the majority of its products were fast-moving "Western" medicines, especially antibiotics. Going through the product list at the company's website, it was possible to check whether the same drugs are produced under different names. Some popular medicines such as ciprofloxacin are sold under identical names but in different colors (such as white and pink), or with different sequences of identical components. A study of confusing brand names of Indian pharmaceuticals showed that identical names and names looking or sounding alike are common and pointed to the health hazards involved in confusing drugs at the level of practitioners, chemists, and patients. Not realizing that this confusion is a conscious marketing strategy, the authors called on the industry to "do a thorough check about the available brand names before naming their product" (Rataboli and Garg 2005). This seems to be exactly what the industry does, thereby making new products look familiar and identical products appear to be different.

In addition to aggressive marketing toward registered private practitioners in the center of Bhubaneswar, companies promote their products through a heterogeneous group of practitioners who may be autodidactic; they may have some experience from working as an unskilled assistant in a clinic; or they may have obtained a diploma that allows them to practice different sorts of "alternative medicine." Such diplomas may be issued by a training institution, or they may be obtained without formal education.[4] I shall call this group Private Practitioners Without Formal Qualifications (PPWFQs); they are often referred to as "quacks" by medical doctors and MRs:

M: [In the] periphery [of Bhubaneswar] . . . so many quacks are there. . . . Quacks are the main prescribers of all the companies.
Jens: Okay. So they're actually very important?
M: Very important! . . . Actually from the quacks, the brands of the companies are branded; they are fixed in the minds of the people. . . .

Actually they create the demand and they fix the product in the mind of the people. Actually, the quacks are very easily motivated by the medical representatives. Their style of working is different and they have some little ... little bit [of] knowledge. ...

J: But not a lot?

M: Not a lot. Actually they are not M.D. or Ph.D. or [have a] different type [of qualifications]. So they are quacks ... R.M.P. [Registered Medical Practitioners] ... quacks. So they have a little bit of knowledge of pharmacology, so they are very easily motivated by the representatives or by the managers. And if the manager visits them [they] give so many orders to the medical representatives. ... Actually, quacks are the main prescribers or main practitioners for all the companies in Orissa.

Mr. M.'s illuminative depiction differs in no way from information that could be obtained from other sources. The case illustrates how the pharmaceutical industry weaves a network of relations that effectively pushes drugs from companies to customers by means of actors such as medical representatives, gifts, money, and "quacks." Given the direct influence of the pharmaceutical industry on treatment practices, it is not surprising that practitioners in low-income localities in Delhi showed similar patterns in dispensing and prescribing drugs, irrespective of their qualifications (Das and Das 2006:182). The deodorant spray given to Dr. S. was a symbolic gift, a token of mutual goodwill; in contrast, receiving a share of the profits stemming from the sales of a particular medicine is a business deal, and a trip to Goa is a bonus. Kamat and Nichter (1997:130) seem to imply that such incentives mark different stages and degrees of strength of a relationship between company and provider. Smaller gifts of a symbolic nature are used to please the doctor and may, especially in the case of male doctors, be directed at his family, rather than himself. Based on the logic of gift exchange (Mauss 1954; Oldani 2004), the gift is to be returned over time in the form of increased sales, thereby gradually strengthening the bond.

Private Practitioners

Because of the patient-centered basis for inclusion of practitioners in this study, the types of practitioners and their clinics varied substantially, from well-established medical specialists who prescribed but did not dispense medicines to "autodidactic" practitioners who dispensed medicines but never would run the risk of putting it in writing. The distinction between prescribing and dispensing practitioners is commonly recognized in principle, even if it is often blurred in practice as prescription drugs were easily available without prescription in Bhubaneswar and elsewhere in India (Das and Das 2006:182; Dua et al. 1994:719; Greenhalgh 1987:309; Kamat and Nichter 1998:786; Kapil 1988; Saradamma et al. 2000; Van der Geest et al. 1996:159). In Bhubaneswar, it tends to follow the fault lines of city center versus periphery and more versus less qualified practitioners. Some clinics were both dispensing and prescribing, like in the case of a homeopathic practitioner running a chemist shop next to his clinic, or medical practitioners being available for consultation within the convenient premises of a chemist shop or a laboratory.

We also observed that OTC drugs such as cough syrups, painkillers, or vitamins were routinely added to prescriptions with a clear recommendation of a specific brand name. Although this practice of writing brand names of OTC drugs on prescriptions could give the practitioner some measure of quality control, it also served as a token of loyalty toward a specific company. Furthermore, almost all medical practitioners used prescription pads that mentioned names and addresses of chemist shops. Despite this obvious hint to patients, practitioners would energetically deny having any special connections with specific drug stores.

The distinction is further blurred by the generous distribution of free samples of drugs to medically qualified practitioners. Even if they do not dispense, they have the option of using these samples as replacement for drugs they would otherwise have written to "try out" a new drug. At the practitioner's discretion, the drug may be given for free or he or she may charge directly or indirectly through the consultation fee. Although all medically qualified practitioners participating in the project availed of such drug samples, one had on the floor behind his desk a veritable pharmacy of sample drugs in boxes and bags that were systematically ordered according to drug families like antibiotics, analgesics, et cetera.

Because of the frequent visits of MRs, private practitioners are under substantial pressure from pharmaceutical companies operating in a tough competitive market to prescribe as many drugs as possible, irrespective of their formal qualifications. Patients will shift from one to another practitioner if they feel they do not get value for money in the form of cure or symptomatic relief. Poor patients cannot afford the luxury of loyalty. In their evaluation of doctors it was immaterial whether or not the doctor had a degree. Our interviews in the basti revealed that many patients looked at medical doctors with cautious skepticism, suspecting them to be closely linked to the pharmaceutical industry. In a number of cases, patients with chronic conditions would sustain the relationship with a particular doctor, and sometimes this relationship would also lead them to bring their own or relatives' acute episodes of illness to the same practitioner. Only one of the private practitioners in the study maintained patient records. More commonly, the responsibility to keep the documentation necessary to rule out a certain diagnosis if a given treatment did not work would be entirely left with the patient, as is common in India (Pawar and Pawar 2009:58–59). Patients would have to keep test results, x-rays, medicine bills, old prescriptions, and empty medicine containers and hope that the next practitioner would be interested to see them. Given the individual practitioner's particular preferences for certain drug companies over others, they would readily dismiss previous medication as wrong and old tests and x-rays as outdated and send the patient for another tour through their own networks.

Generally, the medically qualified doctors who were interviewed and observed in this study viewed their therapeutic decision making as being in the best interest of the patient. They saw many patients every day and they treated them in ways that they found fully justifiable. Sending them to a specific laboratory or prescribing drugs of a "partner" pharmaceutical company was not perceived to jeopardize the patients' interests. The many drugs written on prescriptions were perceived to be what the patients wanted even if they were not strictly medically justifiable. Indeed, doctors concurred that if they did not do it, there was a risk that the patient would go to a less qualified practitioner to obtain the desired combination of drugs that would

ensure quick symptomatic relief. Knowing that the ability to sustain the patient relationship over time—and thereby the survival of the business—depended on the ability to satisfy patient expectations, the practitioner had to carefully evaluate the goods and bargains offered by MRs. Even for a medical practitioner, it was virtually impossible to actually know whether the active component written on the packaging existed in the medicine. We observed that more experienced doctors with medical qualifications, and medical specialists in particular, tended to be more conservative in their choice of drugs than less qualified and less experienced practitioners and chemists. Some doctors described this as an issue of "faith":

> Doctors develop faith in different medicines depending on their experience with the medicines. One medicine may work for my patients but may not work for other doctors. We must have faith in the medicine otherwise how will the patients have faith in us. That's why we hesitate to prescribe a new medicine from a new company at first. [MD, male, 34 yrs.]

This reluctance is one of the reasons MRs had to rely on PPWFQs in the periphery to open the market for new drugs. When a doctor *was* convinced to try a new drug, it was on a trial-and-error basis:

> Suppose a new company has ... stepped into the market. ... The doctor knows that the patient should get cured within three days. But the patient doesn't get cured. ... So, the doctor comes to know that the medicine is not effective and maybe the company is not a good one. Therefore he doesn't prescribe any more medicine of that company. [Female laboratory technician with attached medical practice and chemist shop]

Estimates of the prevalence of counterfeit and substandard drugs in India vary substantially, but Odisha is at the high end and medical doctors risked jeopardizing their business if using substandard drugs. From the practitioner's point of view, patients with treatment failure would seem to have the same behavior as patients with treatment success: they would not return. Apart from the ethical implications and obvious public health hazards, the trial-and-error practice was undermined by this inclination of disappointed patients to seek elsewhere. Therefore, the practitioner's evaluation of a new drug could require a substantial period of time, depending on frequency of usage.

Although the PPWFQs may be easily convinced to use a new drug, they may, for the same reason, be "promiscuous" vis-à-vis companies. In contrast, the more conservative medical doctors could be expected to prescribe large amounts of a given drug, once convinced of its qualities for both business and patients. Oldani notes that, in the United States "profit for the industry only begins to flow from scripts [prescriptions]. Drug reps [MRs] are key players in this process and collectively can influence the generation of millions of prescriptions and enormous product sales (on a daily basis)" (Oldani 2004:329). This is the case in India as well. Accordingly, substantial sums are invested by pharmaceutical companies to convince medical doctors. Kamat and Nichter (1997:127–128) estimated the aggregate investment in Mumbai per medical practitioner in 1993 to be $180–$200, based on only ten

visits per month. In Bhubaneswar, more than ten years later, the number of visits was 20–50 MRs per clinic per day, indicating an exponential increase in marketing investments.

Primary Care in Bhubaneswar: The Drug Store

Except for immunization campaigns, reproductive health, and poorly functioning government dispensaries, the state has failed to establish primary health care in urban areas.[5] Primary health care has been left to private practitioners, including homeopathic, Ayurvedic, and medical practitioners, who often have a bachelor degree or less as an educational basis. Poverty and less education are associated with use of prescription drugs without prescription (Saradamma et al. 2000:899). Poor patients often visit the chemist as first choice of treatment hoping for a cheap quick fix that will spare them the expense of seeing a doctor.

Two examples of such brief encounters observed at a drug store are provided as illustrations: A man of approximately 40 years came to a chemist and said: "I have been suffering from a cold for the last two days. Due to this cold, I think my throat is swelling like this." The chemist observed his neck from the outside, took out three drugs and said "Take this medicine. You will be completely cured from your disease." The customer asked about the price, which was INR18 ($0.30). He paid INR50 and received the drugs and change. Subsequently asked about the drugs, the chemist said: "I gave him Doxycycline for anti-allergy and Chlorphenivamine maleate (cpm) with Paracetamol for the cold. Doxycycline is an antibiotic of medium range."

The "antiallergy" drug is actually Chlorphenivamine, which is an antihistamine (MedlinePlus 2008), but the cocktail is likely to give quick relief. If the symptoms were caused by an infection, then there was a chance that Doxycycline may have an effect. This example illustrates a common practice, which involves a risk that a potentially more serious condition—such as a streptococcal infection—goes undiagnosed for a prolonged period of time because an insufficient course of antibiotics may temporarily suppress an infection. This widespread practice and the occasional distribution of substandard drugs contribute to the development of drug resistance.

The next customer at the same chemist shop was a man who was mute and had to explain his condition using bodily gestures. He repeatedly pointed to his body, nose, and throat. From his physical gestures, the chemist indicated that he had understood, gave him two different tablets, and described how to take them. The cost was INR12 ($0.20). The communication problem had not affected the chemist's diagnostic abilities. He said: "He is suffering from body pain, running nose and throat congestion. So I have given him Bactrin, which is an antibiotic having antiallergic cetrizine+psydophedrin with abrosol as its components, and Nimesulide tablets."

The above examples illustrate that diagnostic practices were readily performed at chemist shops and that therapeutic interventions may be based on insufficient or inaccurate knowledge about active components. The latter example also illustrates an important aspect of the aggressive marketing of pharmaceutical products on the basis of strategies that seem to be intentionally misleading. Bactrin is a common misspelling of Bactrim, an antibiotic used for serious infections and produced by the company Rosco. Bactrin is *also* the name of an Ayurvedic drug produced in India by

Nutrit Products that boasts of "strictly modern scientific medicine based on different pharmacopoeia and rooted in the time-honored traditions dating back to the golden era of the Vedas resurrected by Nutrit Products" (Ayurveda Nutrit 2007). According to the company, Bactrin contains a number of herbal extracts, is without any form of side effect, and is as effective as "biomedical" broad-spectrum antibiotics and chemotherapeutics. It does not, however, contain any of the components mentioned by the chemist, who may also be confused by the market's opaque fusion of formerly distinct medical systems.

The chemists were aware that they performed the "medical work" of diagnosing and prescribing medicines without having an appropriate educational background. One experienced chemist described how he tried to build his diagnostic skills through patient encounters:

> We see the prescription of the Neurology professor. Then we ask, "ok that pain you had in your head, how was it cured." They would say, "we had been to [neurologist]—see what he has written." Then we see … for what he had written this. … But to confirm, we have to ask more people with similar prescriptions. [Chemist, male, 47]

In addition to not being formally qualified to diagnose disease and prescribe drugs, many chemists were also not authorized to run their shops. A license is required to sell pharmaceuticals in India. The Food and Drug Administration issues licenses and has established certain minimum requirements concerning storage of drugs, such as maintaining a refrigerator and cash memos for certain scheduled drugs and proprietary medicines. As has been found elsewhere in India (Kamat and Nichter 1998:783), it is a common practice in Bhubaneswar for trained pharmacists who do not operate a chemist shop themselves to "sublet" their license, thereby allowing others to circumvent the rules, implying very different qualities of chemist shops; the label of PPWFQs also includes chemists without formal qualifications.

From the chemist's point of view, only a limited number of drug companies can be managed—in the present study, the range was assessed to be 5 to 20 companies for retailers. The combination of companies and their specific drug portfolios need to match consumers' demand, but the chemist must also balance supply with the risk of accumulating slow-moving drugs that may expire. It is a managerial advantage to have more business with fewer companies. The chemist shop becomes a node in a molecular network involving a relatively small number of pharmaceutical companies, with a limited number of practitioners with or without formal qualifications in the chemist's vicinity being targeted by the MRs of those companies. With the large number of companies operating in India, the legal issue of formal qualifications of chemists does not affect a pharmaceutical industry in desperate need of outlets and, in combination with lax government control of pharmacist licenses, it becomes clear why there are chemists on practically every street corner.

Discussion and Conclusion

The ability of the pharmaceutical industry to manipulate health care and the crucial role of the medical representatives in this feat is not unique for Odisha. In spite of different sites, anthropological studies in Mumbai, India (Kamat 2001;

Kamat and Nichter 1997, 1998), Tanzania (Kamat and Nyato 2010), and North America (Oldani 2004, 2009) have all pointed to MRs' strategic role in changing the rationale of health care from patient needs to industry needs. However, Odisha seems to be an extreme example. According to the Indian National Commission on Macroeconomics and Health, while the share of health to total household expenditures in urban Odisha is close to the national average (4.51 and 4.91 percent, respectively), urban Odisha has the highest proportion of drug expenditure of total household health expenditures in the country (90.26 percent against an average of 69.18 percent; see GOI 2008:77).

The research presented here does not imply that private practitioners are better or worse than many other professional groups. It shows that the private health system in a town like Bhubaneswar works under certain conditions and constraints that a provider—irrespective of qualifications and mode of working—cannot escape if the business is to thrive. The private health care sector is characterized by overproduction, excessive competition, and inadequate quality control, and it is overseen by a less than reliable state machinery; the health of the patient is, unfortunately, not central.

What, then, may a "health (care) system" mean in medical anthropology? As Kleinman pointed out, the formal description of a health system prevalent in medical literature is analytically irrelevant in medical anthropology because of its limited resemblance to lived experience. He proposed to perceive health systems as "local social systems, which can be related to a potentially large number of variables impinging on a specific setting and which may differ from one locality to another" (Kleinman 1980:35). However fruitful this open-ended definition was in terms of setting off a large number of medical anthropological analyses of various aspects of health care with a new emphasis on patient experience, its primary theoretical focus was illness oriented and phenomenological with fewer advances in terms of understanding health systems. Proponents of critical medical anthropology have proposed a world system–oriented generic framework (e.g., Baer et al. 2003), and more recently, Das and Das suggest to look at the engagement of households with practitioners near them as an "ecology" to include in the analysis the "many sites that lie beyond the bedside of the patient" and the "processes that shape both medical and household understandings" (Das and Das 2006:177). This ecology consists of complex "assemblages" of "state imaginaries, markets, and household economies" (Das and Das 2006:181) that shape therapeutic strategies. The short-term nature of these strategies must be understood as "the result of a complex assemblage comprising poor regulation by the state, the pattern of cash flow to the households, and the mutation of both biomedicine and traditional medicine to create a specific local ecology of care" (Das and Das 2006:192).

The concept of ecology serves to expand the analytical focus beyond a narrow notion of health system but shares with the Latourian concept of "assemblage" a focus on the aggregate level. The design used in the present study is similar to that adopted by Das and Das in taking household decisions as the point of departure for defining a specific local health system from the users' perspective. It differs in its attempt to *disaggregate* the assemblages into many smaller informal *molecules* that consist of specific linkages between pharmaceutical companies through medical representatives and wholesale agents, chemists (with or without license), practitioners

and providers (with or without degrees and diplomas), laboratories and state officials. Each molecule is quite small and may be more or less (un)stable: A chemist has relations with a limited number of pharmaceutical companies, as has a practitioner. The practitioner will send most patients to a few chemists and labs, through however subtle means. When the patient goes to a given practitioner, she feeds into the food chain of one specific small network or molecule. This is the role of the patient in a health care market that is exclusively profit driven and highly competitive. What is systematic in this system is not "how to address a health problem" but, rather, the movement of pharmaceutical goods and money. Recent work on this *pharmaceutical nexus* marks a beginning toward theorizing health care scenarios in light of the local variations of this global condition.

Hence, rather than a private health care system, we are looking at a pharmaceutical nexus made up of "a complex chain of symbiotic relationships between all parties involved in medicine dispensing and sales that influences pharmaceutical practice" (Kamat and Nichter 1998:792). There is only the consumer–patient to pay for the entire industry (Oldani 2004). The consequence is that illness frequently is underdiagnosed and overtreated, scarce household resources are spent on unnecessary treatment and tests, and drug resistance problems are out of control.

This article has analyzed some of the ways this nexus sustains itself at the micro level, primarily focusing on small-scale private clinics and chemist shops. As mentioned initially, this level provides the bulk of therapeutic interventions in Bhubaneswar and other Indian cities, especially for the poorest segments of the population. Pharmaceutical industry interests at the tertiary health care level have not been included in the study and have only indirectly been visible, for example by way of the high level of marketing activities directed at medical doctors who combine a position at a hospital with a private clinic outside the hospital. Additional research is required to pursue important questions concerning the industry's marketing strategies and their impact on public health in connection with public health programs, government hospitals (incl. clinical trials) and the burgeoning private hospital sector in India.

Commenting on the notion of "pharmaceutical nexus," van der Geest points out that "we owe it to our informants to contribute to the actual improvement of distribution and use of pharmaceuticals" (2006:313). Because the present study coincided with the drafting by the GOI of a health reform specifically addressing the urban health scenario, entitled "National Urban Health Mission" (NUHM; briefly outlined in GOI 2008:72), All India Institute of Medical Sciences (AIIMS) organized a workshop with key policymakers from the GOI to discuss findings of the present study.[6] Discussions saw as a key element in NUHM the introduction or strengthening of free primary health care services with an adequate supply of free medicines in urban India. Importantly, the draft reform also contained a health insurance component for the poor. The workshop recommended exploring whether the introduction of simple treatment protocols could lead to better prescription practices, which could be linked to the proposed insurance scheme. The implication was that—irrespective of their formal qualifications but with a necessary minimum amount of training—only private practitioners who would implement a determined set of treatment protocols could be accredited for inclusion in the proposed health insurance scheme. Also, policy measures should focus more on professional

and corporate organizations to promote self-regulation among practitioners and companies, not least in the pharmaceutical industry in India (Health Systems Research and Ethics 2008). Given its dominating position, the pharmaceutical industry ought to be actively involved in establishing and overseeing standards even if this results in closing of companies that produce substandard drugs.

In the meantime, the GOI has announced that the NUHM is postponed till after 2012, where it will be merged with the current National Rural Health Mission to form "India's Unified National Health Mission" (Sinha 2010). According to Union health secretary K. Sujatha Rao, the time until then would be used to "sharpen NUHM's execution plan and get its strategy right." Hopefully, this implies both taking stock of the existing competitive drive that undermines health service provision in urban India and conducting operational research to test measures that could contribute toward improving the quality of care and reducing the negative public health effects of a largely uncontrolled private health care sector, thereby potentially increasing the chances that the use of pharmaceutical products may serve relevant health purposes, rather than unduly undermining scarce household resources.

Notes

1. The data from these two studies will be presented elsewhere.

2. *Orissa* was renamed as *Odisha* on November 9, 2010, by Parliament of India. *Orissa* has been retained in quotes and references that predate this change of name.

3. To protect the anonymity of the MR, the company details are not provided.

4. See www.onlinediploma.in for an example of an institution that offers R.M.P. diplomas (alternative medicine), which also allow for issuing of medical certificates and referral of patients for laboratory testing.

5. The situation in urban dispensaries, at least in Bhubaneswar, has changed after the launch of the health reform called the "National Rural Health Mission," in which the ability to increase access to drugs in the government sector in rural areas has benefited some urban and semiurban health facilities as well (author's observation, 2008).

6. Dr. C. S. Pandav, Dr. Nupur Barua, and the Department of Community Medicine at AIIMS were, together with the author, instrumental in organizing this workshop that had participation by the GOI, WHO, and other key players.

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