Patient Care at Home:
Fighting Deficient Medication Adherence in the United States

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Medication adherence is the extent to which a patient observes prescribed medical regimens, including taking medication at the prescribed times, dosages, and frequency. To protect their patients' health, medical professionals promote proper medication adherence. However, in the United States, about 75% of patients may take medications improperly (Benjamin, 2012). The effects include increased hospital admissions, costs, morbidity, and mortality (Ebeywa, Gruss, & Koronkowski, 2021; Peacock, 2021). It is estimated that 125,000 people died due to poor medication adherence every year in the United States. Outside of hospitals and clinics it is even more difficult to ensure patient adherence (Bouwman et al., 2017).

Relatively high nonadherence in the United States is due in part to a commodified healthcare system. The profit motive can promote excessive medication, which in turn can compromise trust. Because commodification also stresses treatment over prevention, it can shift the doctor's role from care provider to treatment prescriber, risking more errors.

Review of Research

Researchers have studied medication nonadherence and its causes. Shmerling (2021) attributed it to the high cost of medication and the complexity of the U.S. healthcare system.

Gellad, Grenard, and Marcum (2011) identified non-financial barriers to medication adherence among the elderly to be disease-related knowledge, health literacy, cognitive function, adverse effects and polypharmacy, patient-provider relationship, and various logistical barriers to obtaining medications. In a study of elderly patients, Jackson (2011) attributes medication nonadherence to problems such as visual impairment, cognitive decline, and other social circumstances.

Bates, Connaughton, and Watts (2009) attribute statin therapy nonadherence to patient factors, practitioner factors, and systems factors. Patient factors include comorbidities, financial constraints, and psychological issues. Practitioner factors include poor knowledge of adherence, time constraints, poor communication skills, and patient-doctor working alliance. System factors include medication costs, lack of clinical monitoring, and drug side effects.

In a study of the relationship between medical mistrust and medication adherence, Dale et al. (2014) found that in African Americans with HIV, mistrust is related to lower medication adherence over time. Medical mistrust is higher among African Americans due to their experience with racism and discrimination in healthcare settings.

In a similar study of African Americans with HIV, Bogart et al. (2010) examined the relationship between medication adherence and perceived discrimination. The researchers considered multiple stigmas, including sexual orientation, race, and HIV-serostatus. They concluded that increased discrimination correlates to reduced adherence.

A study in antidepressant therapy by Lin et al. (1995) found that side effects were the leading cause of medication nonadherence and suggests that primary care physicians can improve medication adherence by providing simple and specific educational messages. Another study on antidepressant users (Battista et al., 2005) proved that beliefs about medications, the severity of depressive symptoms, and specific concerns about antidepressants are significantly associated with self-reported adherence.

Nonadherence to medication instructions can be due to psychological reactance (Brehm, 1966), a reflexive response to instructions that assert personal autonomy. In a study of how patient empowerment affects medication adherence, Náfrádi, Nakamoto, and Schulz (2017) found that higher levels of self-efficacy and health locus of control consistently promote

medication adherence while most external control factors have negative or ambiguous links to adherence.

Bontempi, Burleson, & Lopez (2004) found that social support has a beneficial impact on medication adherence among patients with HIV. Armstrong (2014) explored how healthcare games can be structured to help with treatments and monitor patients' treatment by using the psychology of gamification. It was proven that gamification is effective in having more consistent treatment adherence and a faster rate of self-efficiency in patients.

Financial Barriers

Medication nonadherence is the result of unaffordability. Not all patients can afford their medications. An article (Lebow, 2022) shows that 22% of US adults forgo prescription medications due to the cost, according to the results of a survey. US prescription drug spending has increased more than ten times between 1980 and 2018, after being adjusted for inflation. Of the US adults who made healthcare changes due to the rising drug cost, 18.7% of them delayed getting a refill and 16.4% chose to ration their medication. The commodification of healthcare makes it difficult for Americans to access healthcare due to excessive costs due to prioritizing profits over patient care. This results in limited access to necessary medications for many Americans as ensuring proper patient care is often relegated to a secondary priority.

Burdened by medication expenses, one such patient, Bernetha Patterson (2022), wrote: "My children have their own families to take care of; they shouldn't have to pay for me because Medicare won't." Patterson resorted to "forgoing filling my prescription this month." She admitted: "I don't know what will happen, but I know purchasing my medication is simply not an option."

The diabetes epidemic in the US is a prime example of the devastating impact of rising medication costs. In 2021, over 100,000 Americans lost their lives to diabetes, with death rates increasing by 17% in 2020 and 15% in 2021 (Marquardt, 2022). This sharp rise in deaths is attributed to the exorbitant prices of insulin, which diabetics depend on to survive. While diabetics make up just 10% of the population, they account for 25% of total healthcare spending in the US, and 33% of prescription drug spending, largely due to the soaring cost of insulin. Only three companies, Eli Lilly, Sanofi, and Novo Nordisk, supply 90% of insulin, leading to prices that are on average 800% higher than in other developed countries. It is estimated that at least a few diabetics die daily directly due to lack of access to insulin.

Social groups formed to help patients overcome such financial obstacles. One of them, Patients For Affordable Drugs, is an independent organization that advocates for patients like Patterson (PFAD, 2022). They aim to educate the public about how drug corporations monopolize the drug market and raise drug prices. The organization helped pass the Inflation Reduction Act, which limited price gouging on existing drugs, and they are now fighting to do the same for newer drugs. Their goal is to achieve accessibility and affordability for patients while meeting the need for fair profits.

Psychological Barriers

The commercialization of healthcare has also weakened the doctor-patient relationship, according to Baker-Porazinski (2019). Compared to the older generations, who had stronger doctor-patient relationships, patients today have lower expectations and trust in their doctors. Good doctor-patient relationships are essential for patient care and directly affect the healing process. Encouragement from doctors can even improve the effectiveness of the medication.

Thus, the erosion of trust between the two will have profound consequences, such as decreased medication adherence.

Viewing healthcare as a business relationship between patients and medical providers has contributed to a decline in empathy among healthcare professionals. A profit-driven healthcare system coupled with a lack of empathy undermines patients' trust in medical providers. The marketing efforts of pharmaceutical companies can influence physicians to prescribe certain medications, leading patients to question whether their doctors are more focused on their financial gain rather than their patients' well-being. As a result, patients begin to view pharmaceutical companies and medical professionals with skepticism, recognizing that they are the ones who benefit most from a commodified healthcare system.

Patients may develop a sense of distrust towards their medication due to side effects or witnessing others' negative experiences. Events like these can instill fear and apprehension in patients, causing them to question the safety and efficacy of their medication. Furthermore, concerns about dependency or addiction can further exacerbate negative emotions and impact medication adherence. A patient's mental state can also act as a psychological obstacle to medication adherence. Patients who struggle with depression are less likely to adhere to their medication regimen as prescribed. In addition, a negative healthcare experience or a lack of support from healthcare providers can leave patients feeling frustrated and helpless. Healthcare professionals can help address these issues by engaging in conversations with patients to uncover any underlying concerns, or by utilizing mental health screenings and questionnaires in clinics to detect any potential issues.

Improving communication and support between patients and providers is one effective approach to overcoming these psychological barriers. Up to 55% of medication nonadherence

can be attributed to inadequate communication. From the medical professionals' standpoint, they wanted patients to take their medication properly (Kim, n.d.) and aimed to promote a “trusting and effective relationship between patient and practitioner” by maintaining a blame-free environment and praising goal achievements. Empathy and compassion are increasingly emphasized in patient care to enhance patient satisfaction. Healthcare teams and administrators are also implementing effective interventions and improved patient engagement to boost medication adherence.

Health Illiteracy

Health illiteracy can hinder medication adherence as patients may lack understanding about their medication, including its purpose, potential side effects, and the time it takes to become effective. In the United States, approximately 90 million adults have inadequate health literacy, which refers to an individual's ability to obtain and comprehend information related to health promotion and maintenance in modern society (Brown and Bussell, 2011; NIH, 2021). Personal health literacy is essential when it concerns making informed-health decisions for themselves or others.

Lower medication adherence is also a common outcome of inadequate health literacy, as it often results in misunderstandings. For instance, patients may mistakenly assume that their medication is unnecessary if they do not notice any immediate changes when they start or stop taking it. This is frequently the case with patients who have chronic illnesses, where medication is intended to prevent future complications rather than alleviate present symptoms. Additionally, patients may discontinue their medication once their symptoms have resolved, assuming that they are fully cured.

Low health literacy is a commonly overlooked and unaddressed issue in healthcare. Patients may feel embarrassed by their lack of understanding of their medication, leading them to hide their health illiteracy and avoid seeking assistance. Furthermore, inadequate health literacy can have significant economic ramifications. The annual healthcare costs for Medicare enrollees with low health literacy are four times higher than for those with high health literacy. This disparity can be traced back to the commodification of healthcare, which often results in a lack of focus on patient education and support.

Like psychological barriers, healthcare providers can take measures to address health illiteracy by investing time in educating patients about their medication and establishing a shame-free environment. Even sharing clinical notes with patients can have a positive impact on medication adherence. According to a study published in the Annals of Internal Medicine (DesRoches et al., 2019), about two-thirds of surveyed patients reported having a better understanding of their medication's purpose, and 15% of them adhered to their medication better.

Negligence

Low medication adherence can also be attributed to patient negligence, where patients forget to take their medication or misread the instructions (Dijkstra et al., 2020). One patient said, “So, I have medications for 12 o'clock, but when I sleep at that time and wake up at let's say 12.30 o'clock, it is too late to take it. Someone told me to not take the medications when the intake moment has passed, so I don't take the pills.” Another patient admitted, “I don't know the rules, I stir all pills in a glass of water and when they are mixed, I drink the water.” Other examples of negligence include taking expired medication due to misreading the expiration date or forgetting about it.

In some cases, medication negligence can be attributed to age-related or disability-related changes such as cognitive decline (Cameron, 2017). For instance, individuals with memory impairments may forget to take their medication or forget the appropriate timing and dosage. Patients with visual or hearing impairments may experience difficulties in reading labels or hearing instructions. Similarly, individuals experiencing a loss of dexterity may encounter challenges in opening medication bottles or handling their medication.

To prevent such instances, patients require better care and support. Third-party involvement is crucial to combat medication negligence and mitigate the associated risks. One possible action is to involve a caregiver with medical knowledge. Another option is to use an app designed to improve medication adherence, which can provide timely reminders to take medication, notifications of expiration dates, and specific instructions on how to take the medication correctly.

Medical practitioners can also contribute to medication negligence. The profit-driven nature of the healthcare industry leads to overprescribing and the emphasis on the quantity of patients seen rather than the quality of care provided, which can result in medication errors and non-adherence due to inadequate patient education and follow-up care. Prescription errors are more common than errors in patient care, as there are thousands of prescription medications available on the market and sold over the counter, making mistakes almost inevitable (Law, 2020). These errors can cause patients to suffer from mild discomfort to psychological and physical pain, resulting in reduced patient satisfaction and loss of trust in the healthcare system. In the United States, medication errors are responsible for 7,000 to 9,000 deaths annually (Tariq, 2022). Common mistakes include prescribing the wrong medication or dosage, prescribing a medication that interacts negatively with another drug the patient is already taking, mislabeling

medication, or failing to warn patients of potential side effects. Medication errors often result from distractions, illegible handwriting, improper storage, and poor communication among physicians. To reduce medication errors, medical practitioners must improve their communication and take measures to minimize distractions and errors in record keeping.

Medical Issues

Patients may choose to forego taking medication due to medical concerns, such as avoiding medication overload or side effects. Medication overload is when the use of multiple drugs ended up causing more harm than benefit to the patient. This issue is particularly prevalent among older patients and those with disabilities who may be prescribed multiple medications, a practice known as "polypharmacy". Elderly individuals are at higher risk of experiencing medical side effects because their ability to metabolize drugs efficiently decreases with age. As the number of medications increases, so does the risk of experiencing medication-related problems.

A patient wrote a blog about their experience and explained, “I’d been on four, definitely over-medicated ... I was starting to feel disillusioned and was tired of relying on chemistry to function. I was feeling blunted, unable to feel much of anything at all.” (Kat, 2015) Another patient stopped taking his medication due to side effects: “I don’t use the furosemide anymore; I don’t have any problems with urinating anymore. I didn’t ask the physician if I could stop using the medications.”

According to the Lown Institute (2019), over 750 elderly Americans are hospitalized daily due to medication side effects. The rate of hospitalization for adverse drug effects in older adults exceeds that of opioids in the general population. Over 40% of older adults take five or

more prescription drugs, with almost 20% taking ten or more. The Lown Institute also predicts that within the next decade, 150,000 older adults will die prematurely due to medication overload. The high number of drug prescriptions and increased risk of side effects contribute to a decrease in adherence rates.

Medication overload and polypharmacy can be linked to the marketing strategies of pharmaceutical companies. Pharmaceuticals spend over $4 billion on direct-to-consumer advertising, making it one of the largest TV advertising categories (Knowledge at Wharton Staff, 2017). These companies prioritize creating new drugs, promoting them, and increasing prescriptions to boost profits. Their efforts have shaped healthcare. For instance, they have pushed for a shift in psychological treatment from psychotherapy to psychopharmacology to sell more drugs (Davey, 2014). In addition, rather than focusing on prevention, drug companies emphasize the treatment of health conditions as it brings in higher profits. Instead of encouraging people to exercise more, they produce drugs that can treat the consequences of a sedentary lifestyle like high blood pressure, heart conditions, and diabetes. Drug advertising has been criticized for promoting more expensive brands to patients over more affordable generic alternatives, even when they are not appropriate.

According to a study by Larkin et al. (2017), drug companies' marketing efforts can influence physicians to prescribe more drugs than necessary, leading to a higher risk of medication-related problems. It is crucial for patients to critically examine drug and medication advertisements and understand that their primary goal is to sell products, not necessarily help the consumer. In a study by Alpert, Lakdawalla, & Sood (2015), it has been found that an increase of 10% in advertising exposure can result in a 1-2.5% increase in drug adherence, and a 5.4% rise in prescription purchases, with new initiation accounting for 70% of the effect. However, those

who initiated treatment due to advertising tend to have lower compliance rates. Moreover, advertisements for a specific brand may result in increased utilization of other drugs in the same class, indicating a spillover effect.

Pharmaceutical Companies

The fight to overcome those barriers is not just fought by patients and medical professionals. A source from Pfizer proved that some pharmaceutical companies are actively promoting proper medication adherence (Pfizer, n.d.). Mail-order pharmacies such as Mark Cuban's Cost Plus Drug Company and Amazon's RxPass are increasing the accessibility and affordability of prescription drugs (Plescia, 2023). Aspen RxHealth takes this a step further by prioritizing pharmacist-patient consultations instead of simply dispensing medication. Recognizing pharmacists as a crucial part of the health plan, Aspen RxHealth aims to bridge the gap between patients and their care.

However, Gomes (2023) argues that more pharmaceutical companies must shift their focus from product-centricity to patient-centricity and take a more proactive role in patients' wellness journeys. To achieve this, some companies have partnered with pharmacies, established financial assistance programs, and utilized smart data to improve patient support (Schultz, 2022). These measures can include answering patient queries, providing medication reminders, and offering counseling. One limitation is that collecting patient data is prohibited by law, but pharmaceutical companies can collaborate with medical associations to launch patient adherence programs instead of relying solely on their resources.

While promoting medication adherence can potentially increase profits for pharmaceutical companies, the promotion of medication doesn’t necessarily improve adherence,

and their current focus is more on the drugs rather than the users (Morrison, 2020). The United States is one of the only two countries in the world where drug makers are permitted to market prescription drugs directly to consumers, which allows them to aggressively advertise their products across various media outlets (HHP, 2017). Billions of dollars are spent on prescription drug advertising annually, but the FDA does not approve ads in advance or ensure their accuracy until they are released. This can lead to inaccurate ads being distributed to the public, potentially resulting in harm to patients and eroding their trust in healthcare.

Moreover, the promotion of medication adherence by pharmaceutical companies may have unintended consequences that worsen it. The constant push for more drugs and products can overwhelm patients, resulting in information overload. Information overload occurs when a person receives an excessive amount of information, making it difficult to comprehend and make informed decisions. This can lead to confusion, anxiety, and poor decision-making, ultimately contributing to poor health literacy and negligence, both of which are factors that contribute to medication nonadherence.

Not all pharmaceutical companies prioritize promoting medication adherence in patients. In fact, some have been known to take advantage of their power and increase the prices of life-saving drugs by enormous amounts. Martin Shkreli, the CEO of Turing Pharmaceuticals, infamously raised the price of a drug by 5000% when his company obtained the rights to it (Young & Ferro, 2016). Shkreli reportedly wrote in an email, “I think it will be huge. We raised the price from $1,700 per bottle to $75,000. ... So 5,000 paying bottles at the new price is $375,000,000 -- almost all of it is profit and I think we will get 3 years of that or more. Should be a very handsome investment for all of us. Let's all cross our fingers that the estimates are accurate,” Shkreli wrote in one email. Similarly, Valeant Pharmaceuticals raised the prices of

two heart medications, Isuprel and Nitropress, when it acquired their rights. Such actions by pharmaceutical companies can exacerbate the financial issues that prevent patients from achieving proper medication adherence.

Conclusion

While free market enterprise offers numerous benefits to society, such as a wider range of consumer options, it has had negative consequences for healthcare. Pharmaceutical companies have exploited this system to maximize their profits, often at the expense of patients. This has resulted in unaffordable medications, medical distrust, inadequate health literacy, and widespread negligence, all of which are symptoms of a flawed healthcare system in the United States. Despite the efforts of various groups to improve patient care, medication nonadherence will persist until healthcare prioritizes patients and rebuilds their trust. It is essential for the healthcare industry to shift its focus from profits to patients' well-being and ensure that patients receive the care they need. Although it may not completely solve medication nonadherence, it should significantly mitigate the issue.

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