Research Article

A Mixed-Methods Approach to Understanding Patients' Cost, Quality & Access to Care Concerns Regarding the U.S. Healthcare System

Kristin A. Schuller[1*], Shannon E. Nicks[2]

[1]Associate Professor, Department of Social & Public Health, Ohio University, USA

[2]Assistant Professor, Department of Social & Public Health, Ohio University, USA

[*]**Corresponding author:** Kristin A. Schuller, Associate Professor, Department of Social & Public Health, Ohio University, USA

Abstract

Background: In the U.S., 9% of the population does not have health insurance, per capita spending is almost $10,000, and medical errors are the third leading cause of death. As a wealthy nation, with 18% of our Gross Domestic Product (GDP) spent on healthcare, we should have equity in access to care and better individual and population health outcomes.

Methods: The research team developed a 36-question mixed-methods electronic survey. The survey included quantitative items to collect participants' demographic information, health characteristics, and cost, quality, and access to care barriers. The survey also included open-ended items to explore participants' concerns regarding cost, quality, and access to healthcare. Data were analyzed to examine how trends across these three indicators influence patients' perceptions of the healthcare system, their health, and health behaviors.

Results: This pilot study contains results from 63 individuals who consented and completed the survey. Participant demographic and health related characteristics are presented followed by qualitative findings. Seven categories were found within the three main themes: access-limited providers, trusting the provider, insurance challenges; cost-choosing between healthcare and other necessities and affording services; quality-medical problems and poor quality providers. Triangulating cost, quality, and access across these patients found limited consistency across the three indicators, except that cost was reported as an access to care barrier.

Conclusions: Participants expressed concerns regarding their experiences with the current U.S. healthcare system and fear of future health system interactions. According to the paradigm, as a nation, we spend the most on healthcare, yet have the worst health outcomes. When triangulating the participants' barriers, all three indicators were nearly equal when assessing the quantitative data. However, the qualitative data indicated that while common themes were found between access and cost, there was no congruence among the quality of care problems reported.

Literature Review

The U.S. healthcare system lacks equity in accessibility, affordability, and quality, contributing to poor individual and population-level health outcomes, ranking 11th among industrialized countries [1]. The U.S. has fewer doctors and hospital beds per 1,000 people than other developed nations [2]. With over 7,000 primary care Health Professional Shortage Areas (HPSA) across the U.S., only 45% of the U.S. population's needs for primary care are being met [3]. Resulting from lack of universal coverage and the repeal of the individual mandate, 11% of the U.S. population were uninsured in 2019 [4]. Furthermore, while health insurance aids access to care, other barriers still exist for a large portion of the insured population: e.g., transportation, provider hours or location, the stigma associated with seeking select services, lack of trust in providers, harassment from the medical community, and so forth. All of which result in a less than efficient health care system.

Affordability and cost also create significant barriers within the U.S. healthcare system. While the U.S. spending on healthcare is almost $10,000 per capita and 18% of the GDP, other countries average $5,000-$6,000 per capita and 10-12% of the GDP [5,6]. Costs are predicted to continue increasing over time. One study predicted that by 2040, the U.S. will spend 29% of its GDP on healthcare [7]. Healthcare costs rise with age - the financial burden

per capita is six times greater among individuals age 85 years and old compared to individuals 50-54, and 40% of Medicare expenditures pertain to healthcare delivered to individuals in their last two years of life [7]. One study on Medicare spending found that individuals who self-reported being in poor health spent six times more than those in reportedly excellent health [8]. Similarly, those who reported being in poor health were significant more likely to die compared to those in excellent health, 21% vs. 2% mortality, respectively [8].

The U.S. healthcare system has worse health outcomes and greater patient safety concerns, with medical errors representing the third leading cause of death in the United States [9], killing between 44,000-98,000 people per year [10]. One study found that 10.5% of physicians reported a significant medical error in the last three months [11], leading to over 250,000 deaths per year [9]. Death aside, medical errors can have permanent effects on patients who survive. Mazor et al. found that medical errors affected patients' physical, emotional, or psychological health, damaged relationships with providers, caused disruptions in their daily lives, and/or resulted in behaviour changes [12]. Aside from the effects on patients, medical errors can financially cripple organizations and cost the nation billions of dollars a year [13].

What are Americans saying about their healthcare and healthcare system? From a health system perspective, research has found that Americans are dissatisfied with the availability of affordable healthcare, high costs associated with hospital care and pharmaceuticals, limitations to health insurance coverage, quality of care provided, and the patient-centeredness of insurance and pharmaceutical companies [14]. However, these researchers have also found that, while dissatisfied with the healthcare system, most Americans are satisfied with their individual healthcare services and professionals [14]. They report trusting their providers and feeling respected by their providers [14]. Another study found that only 26% of Americans thought the U.S. spent too much on healthcare [15]. Conversely, a 2005 survey found that a quarter of Americans reported an inability to pay for medical bills over the past 12 months [14]. Due to Medicaid expansion, one study found a decrease in patients' inability to pay for medical care and follow-up care, need to see a specialty provider but unable to afford it, and worry about and problems paying medical bills [16].

Numerous quantitative, qualitative, and mixed-methods studies have been conducted that identify barriers and inefficiencies within the U.S. healthcare system. However, few studies triangulate the relationship between these three indicators in the context of the patient experience, which limits our understanding of how these indicators work together to influence patient health behaviors and outcomes. As such, this pilot study used a mixed methods design with quantitative data to first understand where patients faced problems and then leveraged qualitative methodology to

better recognize the cost, quality, and access to care barriers and concerns faced by patients. This study contributes to the literature by examining the cost, quality, and access to care concerns of patients by triangulating quantitative and qualitative data.

Methods

Sample

Participants were recruited via social media platforms (e.g., Facebook) and Research Match for this study. A summary of the study aims and link to the survey was published on these platforms to encourage participation. The brief advertisement also included the inclusionary criteria: U.S. citizens and adults aged 18 years and older. Once individuals accessed the electronic survey, they were provided with the details of the consent, amount of time needed to complete the survey, and general risks and benefits of participation. At the bottom of the consent form, individuals were asked if they consented to participate in the study. If they consented, the participant would select 'yes,' then the survey opened. If a participant did not consent to participate, they selected 'no' and the survey ended. No participant incentives were offered for completion of the survey. The study was approved by the university's institutional research board.

Data collection

The research team developed a 36-question mixed-methods electronic survey using Qualtrics. The survey included quantitative items to collect participants' demographic information (age, gender, household income, educational attainment, employment status, insurance status, marital status) and health characteristics (perceived health status, choice in health providers, access to a regular doctor). The survey also included open-ended items to measure participants' concerns and barriers regarding cost, quality, and access to health care. Open-ended items included: 1) Do you face many barriers in accessing the health care system? 2) Do you face any barriers due to the cost of health care? 3) Have you ever had a problem with the quality of health care services you received? If the participant responded yes to any of these questions, they were then prompted to provide additional details regarding the associated barriers or problems they experienced.

Data analysis

Univariate analysis in the form of frequencies was used to determine the demographic and health characteristics of the sample. An iterative, focused coding process [17,18] was used to analyze text responses to open-ended questions. An initial coding guide was created according to the three main domains assessed by the interview questions, including access, cost, and quality. Coders worked individually and then met to discuss and reach consensus on their independent codes, adding new codes as necessary to account for emerging themes. Text responses were then grouped by

code and reviewed independently to generate thematic summaries. Coders met again to discuss and reach consensus on major themes. Major themes were then finalized and categorized according to each of the three main domains of interest, access, cost, and quality. Qualitative cost, quality and access thematic summaries were then triangulated with quantitative survey data [19] on participant characteristics to examine any potential influence on patients' perceptions of the healthcare system, their health, and health behaviors.

Results

This pilot study contains results from 63 individuals who consented and completed the survey. Participant demographic and health related characteristics are presented first followed by qualitative findings which were categorized and presented as themes related to access, cost, or quality. Finally, triangulated findings presenting the relationship between qualitative themes and participant characteristics are presented.

Participant characteristics

Table 1 includes participant demographic characteristics. Almost half the sample were between the ages of 27 and 44, two-thirds were female, 80% were non-Hispanic Whites, and slightly over 50% of the sample had at least a bachelor's degree. Forty percent of the sample were employed full-time outside of the home; household income was nearly evenly distributed among the quartiles for household income. Fifty-six percent of the sample had private insurance, followed by Medicare and Medicaid (16% each).

Age	
18-26	12 (19.05%)
27-44	28 (44.44%)
45-64	16 (25.40%)
65+	7 (11.11%)
Gender	
Male	10 (16.13%)
Female	42 (67.74%)
Other	1 (0.02%)
Race/Ethnicity	
White, non-Hispanic	51 (80.95%)
Black, non-Hispanic	3 (4.76%)
Hispanic or Latinx	3 (4.76%)
Asian	2 (3.17%)

American Indian or Alaskan Native	1 (1.59%)
Multiple races	3 (4.76%)
Education	
High school degree or equivalent	6 (9.52%)
Some college but no degree	12 (19.05%)
Associates degree	4 (6.35%)
Bachelor's degree	20 (31.75%)
Master's degree	15 (23.81%)
Doctoral degree	2 (3.17%)
Other	4 (6.35%)
Employment status	
Full time	24 (38.10%)
Part time	9 (14.29%)
Self-employed	7 (11.11%)
Retired	3 (4.76%)
Student	6 (9.52%)
Homemaker	2 (3.17%)
Unemployed	0 (0.00%)
Disabled	7 (11.11%)
Other	5 (7.94%)
Household Income	
<$20,000	16 (25.40%)
$20,000 - $49,999	15 (23.81%)
$50,000 - $99,999	19 (30.16%)
>$100,000	8 (12.70%)
Marital Status	
Single (never married)	21 (33.33%)
Married	28 (44.44%)
Domestic partnership	5 (7.94%)
Divorced	8 (12.70%)
Widowed	1 (1.59%)
Insurance Status	
Medicare	10 (15.87)
Medicaid	10 (15.87)

Private, employer-sponsored	35 (55.56%)
Military/VA	1 (1.59%)
Indian Health Services	1 (1.59%)
No insurance	2 (3.17%)
Obamacare	3 (4.76%)
Other	1 (1.59%)

Table 1: Sample demographics.

Health-related characteristics are presented in Table 2. Approximately 25% of the sample self-reported their health status as fair or poor. Nearly 23% of participants reported having been without health insurance for some time over the past two years, while 62% of the sample reported experiencing barriers to accessing the healthcare system. Furthermore, 19% of participants reported having no regular source of care. Among the study participants, 61% reported barriers to the cost of care, even though only 47% stated barriers related to their inability to pay for care. Finally, 57% of the sample reported a problem with the quality of care they received and 38% study participants responded that they were affected by a medical error.

Variable	N (%)
Health status	
Excellent	6 (9.52%)
Very Good	16 (25.40%)
Good	26 (41.27%)
Fair	11 (17.46%)
Poor	4 (6.35%)
Without Insurance Coverage in past 2 years	
Yes	14 (22.58%)
No	48 (77.42%)
Regular source of care	
Yes	38 (61.29%)
No	12 (19.35%)
More than one	12 (19.35%)
Barriers to accessing the system	
Yes	39 (61.90%)
No	24 (38.10%)
Barriers due to cost	

Yes	37 (60.66%)
No	24 (39.34%)
Barriers due to inability to pay	
Yes	28 (46.67%)
No	32 (53.33%)
Problems with Quality	
Yes	34 (56.67%)
No	26 (43.33%)
Experience a medical error	
Yes	23 (38.33%)
No	37 (61.67%)

Table 2: Health Status and System Characteristics.

Access

Three themes emerged from the open-ended qualitative question on access to care barriers: limited providers, trusting the provider, insurance challenges (Table 3).

Access	Cost	Quality
No providers in an area and/or lack of competition among providers	Choosing between care and other necessities	Medical problems
Trusting the provider, Insurance challenges	Affording services	Poor quality providers

Table 3: Qualitative Themes.

Limited providers

Several patients mentioned their access to care barrier related to the limited number of providers in their area. "Our area has little to no health care competition" (P 7). "[Two] private doctors in our community can rarely fit you in when sick and refer you to 'Quick Care' [a half-hour] drive away; specialty physicians are an hour away" (P12). As a result of limited providers, one participant commented on the long wait times for appointments. "Very long wait times for specialists even when there is a health crisis that requires immediate [attention]" (P34). Another participant stated, "It's difficult to get appointments at places I can afford (university clinic and other low-income options)" (P16). Yet another patient described the timeliness of appointments, "…maybe 3 months before an available appointment" (P45).

Trusting providers

Having trust in providers was another barrier mentioned by several participants concerning access to care barriers. One participant stated:

I have had several issues with the doctor's office that I've been going to for the past 7 or so years. Trying to communicate with the office is a pain. None of the office staff, nurses, doctors, or P.A.s act like they truly care about me as a patient. Most times, they act rude toward me and rush me through my appointment, acting like they don't care to take the time to help me. They also don't seem to take my concerns seriously (P39).

Similarly, another participant commented: Having issues with doctors [who] do not really care and/or listen! Also, my medical info is being tampered within the system, and I [cannot] get a primary doctor because most are prejudice against overweight female (P51).

Trust in providers extends beyond just the clinical staff and includes all administrative staff the patient encounters. One patient stated their access to care barrier as "utterly incompetent scheduling staff" (P46).

One component of a trusting relationship with a provider is respect. A few participants referenced being treated with a lack of respect. "For my own condition, the biggest barrier has been finding a local provider who takes my concerns seriously and will listen to the issues I am having" (P1). Additionally, another patient mentioned, "The primary barriers I face are finding doctors who are knowledgeable about/friendly towards queer people" (P38).

Insurance challenges: Finding providers who accept a patient's insurance can further exacerbate access issues. "Some practitioners are unwilling to take Medicare patients" (P41). Similarly, another patient stated, "[It's] hard to find doctors that take [Medicaid] when needed referrals take forever" (P60).

One participant described the problem as limited providers within their network and cost as their primary access to care barriers.

There were few counsellors available for new patients that had a wait time of less than 3 months, and there were only 3-5 locations I could access with my [insurance]. The co-pay for regular counselling sessions is also costly, so I only go every other week instead of weekly. The hours of [operation] also mean that I have to regularly draw [down] on my sick time for counselling and several other [appointments]. My medication was also expensive initially before I realized I could participate in the 340B program. Better communication from health care providers on [eligibility] could have avoided the issue. Additionally, I wanted to see an allergist as was [recommended] my by primary care doctor, but there are none that my [insurance] covers within 25 miles of my home. Transportation in the rural area I live in is also costly and time consuming (P61).

Approaching the problem from a different perspective, one patient discussed problems signing up for insurance. "Medicaid was pretty much my only option. I had to call about 8 times till I was finally approved" (P 36).

Cost

The main themes in this category are 1) choosing between healthcare and other necessities and 2) affording services (Table 3).

Healthcare vs. necessities: A common problem associated with high costs of care is that patients are often forced to choose which services in their lives are vital. One participant commented:

Often unable to afford medication for mental health, despite having insurance. Cost is… high for certain medications. I am hesitant to seek medical attention, even in the event of an emergency. Often have to choose between meeting basic needs and filling a prescription, or continuing medical treatment such as physical therapy, or mental health counselling, etc. (P2).

A second participant elaborated on the problem of choosing which necessities to pay for. "I genuinely can't afford to pay out of pocket for most medical care. I have very little discretionary income, and paying an extra $50-200 for medical care just isn't within my means" (P16).

Affording services: Participants expressed concern regarding their ability to pay for care. Within the context of affordable services, participants reflected on avoiding care due to high costs, choosing a less comprehensive health plan, the limitations of insurance coverage, and the resulting decreased quality of care and quality of life. From the most simplistic economic perspective, one participant stated, "The cost of health care continues to increase, but my salary doesn't increase enough to cover it" (P19).

One participant admitted avoiding the doctor due to cost. "I avoid doctor's appointments when I can because of co-pay costs" (P42). Similarly, high costs disproportionately affect those with disabilities and chronic diseases. "Because I have a disability and must-see several doctors monthly, I find the number of co-pays to be impossible to pay" (47). Additionally, one participant was disgruntled by the cost of unnecessary care. "I spent nearly $1000 on health care bills for a chronic cough this year just for them to eventually tell me I had asthma" (P52).

A participant highlighted a problem with choosing a plan with less coverage due to cost. Our family has had to decrease the level of coverage we receive to keep premiums down on our healthcare, but our deductibles and co-pays have gone up and so have the premiums each year. In the end, we [cannot] really afford to go to the doctor because of the cost. I had an issue that could not be solved and the doctor ordered labs to try and figure it out and we ended up paying over $800 for those labs and we never solved the issue and I couldn't afford to go back or go to another doctor (P17).

Another discussed the problems when insurance doesn't cover something and the alternative is too expensive. "Prescriptions I need are not covered, but I can't afford the surgery to correct the problem either" (P11). Similarly, another participant stated, "I have knee pain that probably requires a surgery. Definitely [can't] afford it. Also was trying to conceive a child since age 41 with my new husband. [IVF] is extremely expensive and not covered by most insurance plans" (P24).

One participant reported, "I've had to weigh costs vs life. I've been very fortunate in that I've at least been able to afford procedures without catastrophic loss" (P20). Along that vein, affordable services are often linked to the perception of quality of care patients receive. "Sometimes I don't schedule doctor's appointments because I don't want to pay a $25 co-pay for poor healthcare that I receive from my doctor's office. Sometimes I don't have the money" (P39). Furthermore, the cost of care can dampen a patient's quality of life. One participant stated, "[I'm] unable to afford prescribed treatments and medications to increase quality of life" (P35).

Quality

Two themes were found within the quality category, medical problems and poor quality providers (Table 3).

Medical problems: One patient summed up a string of quality problems they encountered. "Multiple misdiagnosis, poor patient tracking, ineffective or missing notation on medical records, no patient follow-up, unclean appearing medical facilities" (P2).

Medical errors are not uncommon in the U.S. Several participants referenced medical errors when questioned about their experiences with quality. "When told you have to stay within a certain area, there aren't many places to go. I was [misdiagnosed], given drugs I didn't need that made me worse and had two stays in the E.R. as a result. [Their] error, my dime" (P11). Another participant commented, "[The provider] scratched my cornea subsequently losing my eye from a routine eye exam… less than 30 days [I] had to have my eye removed" (P55).

One patient stated their quality problem was related to inaccurate chart reviews, which is a precursor to medication errors. "[The provider] not viewing all medications before prescribing another medication which was contrary to interactions" (P34).

Another participant described poor quality associated with excessive testing that lead to no results explaining the health condition. "I have been suffering from a gynaecological issue for over a year. I visited one gynaecologist who could not find the issue so I went to a second doctor. Many labs were ordered, and still the issue was not found. After having to pay a huge bill for going to the doctors, I could not afford any more tests and still have the unsolved issue" (P18).

Poor quality providers: Issues with quality are not limited to poor health outcomes. Other quality of care concerns can stem from the patient-provider relationship. One participant stated, "Some doctors are crappy and not thorough" (P10). Another participant described her encounter with a specific provider. "I once saw a mid-wife who treated me negatively when I disclosed my history of early sexual activity, sexual abuse, and queer relationships. She also made less than positive comments about the effects of my hormone therapy on my anatomy (effects which are normal and desired as opposed to an instance of disease)" (P48).

Similarly, another participant felt their conditions were overlooked. "Primary care doctor did not pay attention to detail or take concern when voicing concern about high blood pressure, issues sleeping, and mental health. I also went undiagnosed with ADHD and was not encouraged to see a psychiatrist until one year into counselling" (P61).

Poor quality can occur throughout a practice and not simply between a patient and provider. One participant explained a sleuth of problems they had with a practice. "My doctor's office provides poor quality of healthcare services. The communication is severely lacking, they don't act like they care, and they rush patients like they are robots and not humans" (P39).

Another participant outlined several quality and communication problems they experienced with a provider's practice.

1) Misinformation has been recorded in my chart due to computerized information systems. It is hard to get it corrected. 2) Contacting doctors is more difficult and I sometimes have to go through a "Team" member, which takes an extra step. 3) Rx which I authorized to be faxed to a pharmacy was not done at all. 4) Rx was faxed to a pharmacy without my assent, the medication was not available at that pharmacy, I went to another pharmacy which had them medication and they could not fill it until the first pharmacy deleted the Rx and sent that information to my insurance company (P41).

One participant related quality to access, resulting from a problem with insurance. "I had Medicaid when my daughter… needed dental work. The only dental clinics that took Medicaid were in terrible parts of town and the care was very substandard" (P24).

Problems with Cost, Quality, and Access: Fifteen participants reported experiencing problems with cost, quality, and access. The most cited access to care barriers were cost of care, providers not accepting the patient's insurance or insurance not covering the provider, and wait times. One patient summarized all these points in their response:

There were few counsellors available for new patients that

had a wait time of less than 3 months, and there were only 3-5 locations I could access with my [insurance]. The co-pay for regular counselling sessions is also costly so I only go every other week instead of weekly. The hours of [operation] also mean that I have to regularly draw dawn on my sick time for counselling and several other [appointments]. My medication was also expensive... Additionally, I wanted to see an allergist as was [recommended] by my primary care doctor but there are none that my [insurance] covers within 25 miles of my home. Transportation in the rural area I live in is also costly and time consuming (P14).

For problems with cost, nine of the participants referenced delays in seeking care resulting from not having insurance and high out of pocket costs of care. One participant explained how they often go without the care they need due to cost even with health insurance:

Often unable to afford medication for mental health, despite having insurance. Cost is wildly high for certain medications. I am hesitant to seek medical attention, even in the event of an emergency. Often have to choose between meeting basic needs and filling a prescription, or continuing medical treatment such as physical therapy, or mental health counselling, etc. (P1).

Another patient stated they try to rationale the expense and look for free advice instead of seeking medical services, "I have to decide, will the benefit justify the expense? Can I take care of it at home? Can I access a colleague for advice for free?" (P12).

The problems with quality mimicked those mentioned above, poor quality providers and misdiagnoses and medical errors. One patient summarized their problems as, "insufficient doctor attention to medical needs; not being treated as an individual [and seeing the whole picture] not just one [health] issue; incorrect diagnosis; incorrect medical records; not viewing all medications before prescribing another medication which was contrary to interactions" (P5).

Triangulated Findings

Triangulating cost, quality, and access across these patients found limited consistency across the three indicators. In the quantitative data, the sample reported cost, quality, and access to care barriers at 61%, 57%, and 62%, respectively. However, only 24% (n=15) of the sample reported experiencing all three. One commonality in the qualitative data was that half this sample reported cost as an access to care barrier. As a result of cost, participants reported delaying seeking health care services and worrying about paying for care. One respondent stated, "I do not attend counselling on a weekly basis because of high co-pay" (P14). Another participant commented, "Prescriptions I need are not covered, but I can't afford the surgery to correct the problem either" (P2). While the qualitative data indicates overlap between the access and cost indicators, each patient described a different problem with the quality of care they received.

Discussion

Problems with access to and cost of care are prevalent among the uninsured; however, less than 5% of the participants in this study reported being uninsured. The problems created by the U.S. healthcare system regarding access to and cost of care are not limited to the uninsured. This study highlights this fact, supporting previous research that found nonfinancial barriers as more common reasons a patient experienced an unmet need or delayed seeking care.

Challenges associated with insurance, geographical location, and having access to trustworthy providers are major problems among the insured population. Other studies have reported quantitative evidence of provider-specific access to care barriers, including lack of trust in the provider [20,21] and perceived discrimination [20]. More broadly, numerous studies highlight systemic access issues, including transportation [22], inability to schedule timely appointments, inconvenient provider hours, and limitations on which provider can be seen [20]. This study provides in-depth qualitative evidence of the nature of these problems and the resulting consequences for patients and the healthcare system overall. We also offer potential solutions that may ameliorate these barriers for both insured and uninsured patients alike.

Participants reported access barriers related to limited numbers of providers, trusting providers and insurance challenges. Improving the number of providers in an area, especially in rural communities, can enhance access to care. One solution is financial incentive programs that provide loans, scholarships, or loan repayments as an incentive to providers who practice in rural or underserved areas. Research has found a significant association between these types of financial incentives and physicians' decisions to practice in rural or underserved areas [23]. An educational strategy is to incorporate rural training tracks within medical school curriculum that focus on rural learning experiences to provide necessary training and exposure to the needs of these communities [23]. Additionally, telemedicine and telehealth are often touted as primary solutions to access to care issues. Telemedicine is a widely studied solution to geographical access barriers and provider availability limitations [24]. It has also been shown to be a cost-effective approach to care delivery [25].

For discrimination and lack of trust among providers, research suggests the use of cultural competence interventions to improve access to and quality of care delivered to patients. Such interventions can include the use of interpreters for language barriers, cultural training and educational opportunities for providers, and a focus on recruiting a diverse workforce [26]. These interventions can also be used to increase the level of trust between patients and providers. Trust is an important access and

quality metric; as research indicates, greater trust is associated with better use of services, which can lead to better health [21]. This research also suggests such cultural competence interventions should extend beyond the patient-provider relationship to more broadly address the skills of administrative staff and others with whom patients may interact within clinical settings.

Cost of care is also a major barrier to appropriate and timely use of services. Both insured and uninsured participants of this study reported concerns regarding the overall cost of care and choosing which necessities to pay. Having health insurance is no longer the only predictor of accessibility and affordability of services as mentioned above. These findings support the literature that patients worry about paying for healthcare, limited insurance coverage, and cost of medications [20].

Two solutions to the high cost of care are price transparency and the use of community health centers. Price transparency initiatives aim to publicize hospital's pricing for procedures and other services. While this strategy does not reduce the cost patients pay, it can be used to inform patients' clinical decision making and allows for transparency across systems in an effort to spark competitive pricing strategies [27]. Alone, price transparency only provides one piece of the puzzle. Researchers suggest grouping pricing data and quality metrics to improve the overall transparency of care delivery and aid patient decision making [28].

Aside from price transparency, changing delivery models can also result in cost savings for patients. One study found that patients who used community health centres for a majority of their care needs had lower annual medical costs [29]. These clinics focus on primary care; as such, they can reduce costs by providing a less expensive care option to patients compared to specialty or emergency care, and chronic diseases and ambulatory care sensitive conditions can be better managed through the use of appropriate monitoring by primary care providers. These strategies have the potential to improve care concerns related to affordability for all patients by moving beyond the assumption that insurance coverage addresses all cost-related barriers to healthcare.

Medical errors and the delivery of poor quality care by providers are still rampant problems in the U.S. healthcare system, and this was consistently reported by the participants of this study. The U.S. experiences a significantly higher disease burden, greater premature mortality rates, increased maternal mortality rates, and worse patient safety outcomes compared to other developed nations. Furthermore, the rate of medical errors, which includes medication errors and incorrect laboratory results, is significantly higher in the U.S. compared to other developed nations, 19% vs. 12%, respectively. Additionally, errors were more prevalent among physicians experiencing burnout [11]. Understaffing in hospitals, provider dissatisfaction and burnout, rising number of chronic conditions, and mismanaged medical record systems that

do not afford interoperability contribute to these problems, several of which were highlighted explicitly or implicitly by participants.

There are several strategies to improve the quality of care delivered in healthcare organizations. Public reporting of providers' health quality indicators is a strategy used for quality comparison and benchmark purposes. Transparency in quality can enhance awareness of poor quality and inform healthcare decision making among patients, providers, and administrators.

Conversely, quality reporting can also increase providers' selectivity in which cases they treat, increase data modification and/or reduce the number of quality metrics reported, and can be impacted by the availability of data resulting from electronic medical record issues [30].

Other strategies that focus on quality improvement include patient safety checklists for surgery and wristband color standardization for patient allergies and fall risk. Both of which focus on reducing errors, either during surgery or with medication management. Technology also plays a pivotal role in reducing medical errors. Computerized Provider Order Entry (CPOE), or electronic prescribing, reduces illegible handwriting and transcription errors, and ensures complete prescriptions and other orders are entered into the system. COPEs have been instrumental in reducing medication errors [31]. Clinical Decision Support Systems (CDSS) have been proven to enhance the quality of care delivered to patients via electronic prompts when integrated into patients' medical records [32,33]. These prompts could include medication and chronic disease management, and screenings and vaccination reminders. Additional training for more efficient and effective use of these systems would further address the issues described by some participants in this study.

One method that focuses on improving quality and cost of care is value-based purchasing. Value-Based Purchasing (VBP) is a broad methodology that uses financial incentives from payers to encourage the delivery of high quality care. VBP changes the way physicians are reimbursed for care, such as pay for performance, shared savings programs, and global payments. However, for VBP to be effective, it should incorporate a data-driven approach, insights from providers, and discourage poor performance for care that is not included in the incentive model [34]. The inclusion of patient satisfaction as a quality metric is as important an indicator of quality as is quality outcomes. However, measuring patient satisfaction in a meaningful and objective manner is an ongoing challenge.

When triangulating the participants' barriers, all three indicators were nearly equal when assessing the quantitative data of the entire sample. However, the qualitative data of those impacted by cost, quality and access to care indicated that while common themes were found between access and cost, there was

no congruence among the quality of care problems reported. This is significant and highlights the importance of patient-centred care. Each patient has unique needs based on their health status, socioeconomic status, location in relation to healthcare resources, relationship with healthcare providers, and healthcare utilization. As such, each patient should be assessed holistically based on their social, demographic, and health needs and provided the type and amount of care that meets those needs. A one-size-fits-all policy or initiative may be helpful in addressing how cost influences access to care but will likely be ineffective at resolving problems with access, cost, and quality.

Limitations

Due to the small sample size, it is difficult to generalize this study's findings to the broader population. The sample also tended to be younger, white, female, and more educated than the general population. However, the participants' statements highlight significant problems in the U.S. healthcare system, as found in numerous studies. A second limitation of this study resulted from the method of recruitment which likely introduced selection bias. Those experiencing problems may have been more likely to complete the survey. While this does not affect the qualitative responses referencing cost, quality, and access concerns, the percentages of individuals experiencing one of these barriers may be inflated due to the sampling methodology. Further studies will broaden the scope to include a more diverse group of individuals with minimal or no access, cost, or quality concerns to serve as a baseline. The authors will strategically partner with minority coalitions to gather the perspective of a more diverse sample. This will also improve the generalizability of the study results.

Conclusion

Participants expressed concerns regarding their experiences with the current U.S. healthcare system and fear of future health system interactions as a result. According to the paradigm, as a nation, we spend the most on healthcare, yet have the worst health outcomes. This study positions these outcomes in the context of the patient experience, providing greater insight into the access, cost, and quality barriers that contribute to less-than-ideal population health. Findings of this study emphasize the need to focus greater attention on the process of care delivery. Each healthcare provider should assess their care delivery practices and interactions with patients to ensure that highest quality care and holistic approach to patient-centeredness are made. Organizations should ensure alignment of their policies and procedures with evidence-based best practices to meet the needs of their communities.

Declarations

Ethics approval

The study participants consented to participate in the study via an electronic consent form. This study was approved by the researchers' university's institutional review board.

Funding

References

1. The Commonwealth Fund (2014) US Health System Ranks Last among Eleven countries on Measures of Access, Equity, Quality, Efficiency, and Healthy Lives.

2. Potyraj J (2016) The Quality of US Healthcare Compared with the World. American Journal of Managed Care.

3. Kaiser Family Foundation (2020) Health Care Professional Shortage Areas.

4. Tolbert J, Orgera K, Damico A (2020) Key Facts about the Uninsured Population. Kaiser Family Foundation.

5. McCarthy N (2019) How U.S. healthcare spending per capita compares with other countries. Forbes.

6. Peterson Center on Healthcare & Kaiser Family Foundation (2020) Health System Tracker.

7. Fogel RW (2009) Forecasting the cost of US health care in 2040. Journal of Policy Modeling 31: 482-488.

8. Sutherland JM, Fisher ES, Skinner JS (2009) Getting past denial--the high cost of health care in the United States. N Engl J Med 361: 1227.

9. Makary MA, Daniel M (2016) Medical error-the third leading cause of death in the US. British Medical Journal 353: i2139.

10. Kohn LT, Corrigan JM, Donaldson MS (2000) To Err is Human: Building a Safer Health System. Washington, DC: The National Academies Press.

11. Tawfik DS, Profit J, Morgenthaler TI, Satele DV, Sinsky CA, et al. (2018) Physician burnout, well-being, and work unit safety grades in relationship to reported medical errors. Mayo Clin Proc 93: 1571-1580.

12. Mazor KM, Goff SL, Dodd K, Alper EJ (2009) Understanding patients' perceptions of medical errors. Journal of Communication in Healthcare 2: 34-46.

13. Hammerling JA (2012) A Review of Medical Errors in Laboratory Diagnostics and where we are Today. Lab Medicine 43: 41-44.

14. Blendon RJ, Brodie M, Benson JM, Altman DE, Buhr T (2006) Americans' views of health care costs, access, and quality. Milbank Q 84: 623-657.

15. (2006) Pew Research Center for the People and the Press Poll. March 8-12.

16. Miller S, Wherry LR (2017) Health and access to care during the first 2 years of the ACA Medicaid expansions. N Engl J Med 376: 947-956.

17. Creswell JW, Poth CN (2016) Qualitative inquiry and research design: Choosing among five approaches. Sage Publications.

18. Tie YC, Birks M, Francis K (2019) Grounded theory research: A design framework for novice researchers. SAGE Open Med 7:2050312118822927.

19. Patton MQ (2002) Qualitative Research & Evaluation Methods (3rd Edition). California: Sage Publications.

20. Allen EM, Call KT, Beebe TJ, McAlpine DD, Johnson PJ (2017) Barriers to care and healthcare utilization among the publicly insured. Medical care 55: 207-214.

21. Ozawa S, Sripad P (2013) How do you measure trust in the health system? A systematic review of the literature. Soc Sci Med 91: 10-14.

22. Yang H, Cherry CR (2017) Use characteristics and demographics of rural transit riders: a case study in Tennessee. Transportation Planning and Technology 40: 213-227.

23. Goodfellow A, Ulloa JG, Dowling PT, Talamantes E, Chheda S, et al. (2016) Predictors of primary care physician practice location in underserved urban and rural areas in the United States: a systematic literature review. Acad Med 91: 1313-1321.

24. Bashshur RL, Shannon GW, Krupinski EA, Grigsby J, Kvedar JC, et al. (2009) National telemedicine initiatives: essential to healthcare reform. Telemed J E Health 15: 600-610.

25. Yang NH, Dharmar M, Yoo BK, Leigh JP, Kuppermann N, et al. (2015) Economic evaluation of pediatric telemedicine consultations to rural emergency departments. Med Decis Making 35: 773-783.

26. Betancourt JR, Green AR, Carrillo JE, Owusu AF II (2016) Defining cultural competence: a practical framework for addressing racial/ethnic disparities in health and health care. Public Health Rep 118: 293-302.

27. Wu SJ, Sylwestrzak G, Shah C, DeVries A (2014) Price transparency for MRIs increased use of less costly providers and triggered provider competition. Health Aff 33: 1391-1398.

28. Hibbard JH, Greene J, Sofaer S, Firminger K, Hirsh J (2012) An experiment shows that a well-designed report on costs and quality can help consumers choose high-value health care. Health Aff 31: 560-568.

29. Richard P, Ku L, Dor A, Tan E, Shin P, et al. (2012) Cost savings associated with the use of community health centers. J Ambul Care Manage 35: 50-59.

30. James J (2012) Public reporting on quality and costs. Health Policy Briefs. Health Affairs.

31. Nuckols TK, Smith-Spangler C, Morton SC, Asch SM, Patel VM, et al. (2014) The effectiveness of computerized order entry at reducing preventable adverse drug events and medication errors in hospital settings: a systematic review and meta-analysis. Syst Rev 3: 1-12.

32. Marasinghe KM (2015) Computerised clinical decision support systems to improve medication safety in long-term care homes: a systematic review. BMJ Open 5: e006539.

33. Bright TJ, Wong A, Dhurjati R, Bristow E, Bastian L, et al. (2012) Effect of clinical decision-support systems: a systematic review. Ann Intern Med 157: 29-43.

34. Eijkenaar F, Emmert M, Scheppach M, Schöffski O (2013) Effects of pay for performance in health care: a systematic review of systematic reviews. Health Policy 110: 115-130.