Usual Source of Care and the Quality of Medical Care Experiences

A Cross-Sectional Survey of Patients From a Taiwanese Community

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Objective: This study used a recent patient survey to examine the relationship between having a usual source of care (USC) and the quality of ambulatory medical care experiences in Taiwan, where there is universal health insurance coverage.

Research Design, Subjects, and Measures: The study design was a cross-sectional survey of 879 patients in Taichung County, Taiwan. Children and adults visiting hospital-based physicians were included. Quality of care was measured using items from the Primary Care Assessment Tool (PCAT), representing 7 ambulatory medical care domains: first contact (ie, access and utilization), longitudinality (ie, ongoing care), coordination (ie, referrals and information systems), comprehensiveness (ie, services available and provided), family centeredness, community orientation, and cultural competence. USC was defined based on responses to 3 survey items from the PCAT.

Results: Having a USC was significantly associated with higher quality of medical care experiences. Specifically, having a USC was associated with improved accessibility and utilization, ongoing care, coordination of referrals, and healthcare providers’ family centeredness and cultural competence. However, having a USC was not strongly related with comprehensiveness of services, coordination of information systems, or healthcare providers’ community orientation.

Conclusion: In a region with universal health insurance, patients with a USC reported higher quality of medical care experiences compared with those without a USC. Beyond the provision of health insurance coverage, efforts to improve quality of care should include policies promoting USC.

Key Words: usual source of care, quality care, ambulatory care

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Usual source of care (USC) refers to the provider or place a patient consults when sick or in need of medical advice.1 The relationship between having a USC and the quality of medical care experiences is well-established. A large body of research indicates that having a USC enhances timely access to medical care, improves quality of care received, and results in improved health status; conversely, the lack of a USC is associated with negative health-related outcomes, such as decreased or foregone access to health care, decreased satisfaction, increased hospitalization and nonurgent emergency department use, and longer hospital length of stay.7–13 The link between USC and quality of care may be explained by the presence of patient-centered care, which is more likely to occur when physicians establish continuing relationships with their patients.14,15 Patient selection of USC, versus health system assignment, has also been associated with higher levels of patient satisfaction with care.16

Studies examining the relationship between USC and quality of care have been conducted primarily in US, where there is no universal health insurance coverage, and the presence of USC is often associated with the presence or type of insurance coverage.17 It has therefore been difficult to ascertain whether the observed effects on quality of medical care experiences are in fact because of USC or insurance coverage. Determining the true impact of USC requires studies conducted in settings with universal health insurance coverage and free choice of medical providers. Presumably, universal coverage removes the barriers to access and provider choice results in voluntary health seeking behavior unhindered by referral barriers.

The current study used a recent patient survey from Taiwan (The Republic of China), a region with universal health insurance coverage, to examine the relationship between USC and the quality of ambulatory medical care experiences.

METHODS

Study Setting

Taiwan established its universal National Health Insurance (NHI) program in 1995. The program is a government-run, single-payer insurance scheme financed through a combination of premiums and taxes, which supports a mixed public and private delivery system on a predominantly fee-for-service basis.18 More than 96% of Taiwan’s population is now enrolled in the NHI program.19 Thus, Taiwan offers an ideal setting for studying the relationship between USC and quality of care in a region with universal coverage.

NHI program benefits are more comprehensive than those of the Medicare program in US, consisting of inpatient...
care, ambulatory care, laboratory tests, diagnostic imaging, prescription, and certain over-the-counter drugs, dental care, traditional Chinese medicine, day care for the mentally ill, limited home health care, and certain preventive medicine benefits. And unlike managed care in US, the NHI program allows patients the freedom to choose their own health care providers and therapies. The absence of a referral system and the freedom of provider choice give patients the option to try out numerous doctors and hospitals, regardless of the nature or severity of their illness. As a result, it is not mandatory to have a USC.

Data

Data for this study came from a survey of randomly sampled patients in Taichung County, Taiwan. Taichung County has a population of 1.55 million and occupies 5.74% of the total land area of Taiwan. With 37 hospitals and 1866 doctors, Taichung has physician-to-population (12.03 per 10,000) and hospital beds-to-population (28.06 per 10,000) ratios comparable to Taiwan as a whole.

The sampling methodology was similar to that used by the US National Ambulatory Medical Care Survey. Specifically, it used a 2-stage probability design involving a random sample of physicians practicing within Taichung County, and then a probability sample of patients who recently visited their physicians. In the first stage, physicians were stratified by 9 groups, including 4 primary care groups (ie, internal medicine, family practice, pediatrics, obstetrics and gynecology) and 5 specialist groups (ie, cardiology, gastroenterology, general surgery, dermatology, otorlaryngology). These physician specialties provide the most ambulatory care services in Taiwan. Because doctors in Taiwan primarily practice in hospital settings, community-based doctors were not included. Because of the budgetary constraints, 10 doctors per specialty were randomly selected and each was asked to provide a list of patients whom they saw within the past week.

In the second stage, 20 patients were randomly selected from the lists provided by physicians, and were contacted for interview. Response rates for patients within each of the 9 physician specialty groups were comparable: internal medicine—45%, family practice—48%, pediatrics—48%, obstetrics and gynecology—44%, cardiology—50%, gastroenterology—47%, general surgery—46%, dermatology—46%, and otorlaryngology—49%. Across all physician specialties, nonrespondents were more likely to be sick (eg, hospitalized) and older (65 years and over) than respondents. Telephone interviews were conducted with willing participants by trained graduate research assistants from the Department of Health-Business Administration at Hungkuang University, which also reviewed and approved the study. Oral consent was obtained before the interview and no patient identifier was recorded on the questionnaire or dataset. The final sample size for the study was 879 patients.

Measures

We used the Primary Care Assessment Tool (PCAT) Adult and Child Editions for data collection. The PCAT was developed by the Johns Hopkins Primary Care Policy Center to measure the extent and quality of primary care services in provider settings, and is consistent with a focus on attributes of primary care that have been demonstrated to produce better outcomes of care at lower costs. It focuses on patients’ experiences with aspects of health care delivery rather than satisfaction with them. The questionnaire, which takes approximately 20 minutes to complete, can be administered through telephone or face-to-face interviews, as well as by mail. Validation studies of the PCAT have been published elsewhere and indicate that the hypothesized domains of primary care have substantial reliability and validity.

Another related tool, the Primary Care Assessment Survey, developed by Safran et al, has similar domains and also demonstrates high measurement quality.

Usual Source of Care

We used a classification system provided by the PCAT (and used by other researchers) to identify patients with a USC. Specifically, 3 questions from the PCAT were used to determine whether or not a patient had a USC: (1) Is there a doctor or place that you usually go if your are sick or need advice about your health? (2) Is there a doctor or place that knows you best as a person? and (3) Is there a doctor or place that is most responsible for your health care? Patients who answered positively to any 1 of the 3 questions were considered to have a USC. Subsequent questions were asked about their last visit with their USC. Patients who answered negatively to all 3 questions were identified as not having a USC. For these patients, subsequent questions were asked about the last place in which they sought care.

Domains of Primary Care

The validated PCAT consists of 10 scales representing 7 primary care domains: first contact (ie, access and utilization), longitudinality (ie, ongoing care), coordination (ie, referrals and information systems), comprehensiveness (ie, services available and provided), family centeredness, community orientation, and cultural competence.

First contact care implies accessibility to and use of services for each new problem or new episode of a problem for which people seek health care. Longitudinality presupposes the existence of a regular source of care and the characteristics of the interpersonal relationship between that source and the patient. Coordination of care requires some form of continuity, either by practitioners, medical records, or both, as well as recognition of problems that are addressed elsewhere and the integration of their care into the total care of patients. Comprehensiveness implies that primary care facilities must be able to provide or arrange for all types of health care services, including referrals to secondary services for consultation, tertiary services for specific conditions, and essential supporting services such as home care and other community services. Family centeredness, community orientation, and cultural competence refer to the provider’s knowledge of community needs and involvement in the community. These primary care domains are consistent with the Institute of Medicine definition of primary care.

Specific PCAT items representing the primary care domains are included in the Appendix.
For consistency in response and scoring, all items were represented by a 4-point Likert-type scale with ‘1’ indicating ‘Definitely Not,’ ‘2’ ‘Probably Not,’ ‘3’ ‘Probably,’ and ‘4’ ‘Definitely.’ The sum score for each domain was derived by summing (after reverse-coding where appropriate) the values for all the items under each domain. The sum score for overall quality of primary care experience was derived by summing the values for all domains.

**Sociodemographic, Health Status, and Health Care Measures**

The questionnaire included questions about various sociodemographic characteristics (ie, gender, age, education, employment, household income) and health status (ie, self-perceived health status, whether respondent had any physical or mental concerns that lasted for 1 year or longer). Health care measures included private insurance coverage in addition to national health insurance and provider specialty (for patients with a USC; this was the specialty of the USC; for patients without a USC, this was the specialty of last place of care).

**Analysis**

The overall aim of the analysis was to compare the quality of medical care experienced by patients with a USC versus those without a USC. First, we used $\chi^2$ analyses to compare sociodemographic and health characteristics of patients with and without a USC. Next, we used paired t tests to compare quality of care indicators for patients with and without a USC. Similar comparisons were also made for each of the 9 physician specialties, to determine whether the associations were consistent across specialties.

Ordinary least squares regression models were used to assess the association between USC and quality of medical care attributes after controlling for patients’ sociodemographic, health, and health care characteristics, as well as physician specialty. Patient characteristics were included as control variables to account for differences that may lead some patients to choose a USC and others to choose not to have a USC. Separate models were created for each primary care domain, as well as for overall quality of care. We chose to use standard linear regression models rather than hierarchical specification models (with patients nested within physician specialty) because there was insufficient clustering (Intraclass Correlation Coefficients for patients with and without a USC were comparable at 0.206 and 0.242, respectively).

**RESULTS**

**Sample Characteristics**

Table 1 summarizes the general characteristics of the study sample. Most respondents were female (63.9%) and between the ages of 18 and 44 years old (61.7%). More than half of respondents had some college or vocational school education or higher. Half were employed full-time, and over one-quarter reported household income between NTS 650,000 and NTS 849,000 (US $21,667–$28,300). The majority (72%) of patients reported that they did not have any physical or mental problem, and most (83%) self-assessed their health status as very good, good, or fair. Over one third of respondents subscribed to private health insurance in addition to NHI.

Turning to quality of care indicators, the highest average score across all patients was for utilization (mean = 2.78), followed by comprehensiveness of services provided (2.69), coordination of referrals (2.64), family centeredness (2.63), coordination of information systems (2.61), ongoing care (2.58), cultural competence (2.56), access (2.34), and community orientation (2.14).

**Comparing Patients With and Without a USC**

Comparisons between patients with a USC and those without a USC are also shown in Table 1. Less than half of patients reported having a USC (46%). A greater proportion of patients less than 18 years old or greater than 44 years old, with less than a high school education, or with a physical or mental problem reported having a USC, compared with patients 18 to 44 years old, with a high school education or greater, or with no physical or mental problem, respectively. Additional logistic regression analyses using USC as dependent variable confirmed that female patients and patients with a physical or mental problem had higher odds of reporting a USC (results available upon request).

Looking at quality of care indicators, patients with a USC consistently rated their quality of medical experiences significantly higher than those without a USC ($P < 0.001$). These differences were most pronounced in comparisons of utilization (difference in means = 0.66), followed by family centeredness (0.57), ongoing care (0.53), coordination of referrals (0.44), cultural competence (0.43), access (0.42), coordination of information systems (0.33), comprehensiveness of services provided (0.32), and community orientation (0.21). The association between USC and quality of care was observed in all 9 physician specialties, including primary care and specialty care (results available upon request).

**USC and Other Predictors of Medical Care Quality**

Table 2 displays the standardized regression coefficients for the association between USC and the 10 medical care quality indicators as well as the summary score representing overall quality of care, controlling for various sociodemographic, health, and health care characteristics. Patients with a USC reported significantly higher overall quality of medical care experiences than those without a USC ($P < 0.001$). Looking at individual quality of care indicators, patients with a USC reported higher quality for all but 1 indicator ($P < 0.001$). The exception was providers’ community orientation, which showed no practically significant difference between the 2 groups. Patients with a USC reported higher quality than their no-USC counterparts for utilization, ongoing care, family centeredness, and coordination of referrals. Although statistically significant, differences between patient groups were less practically meaningful for other quality of care indicators (eg, comprehensiveness of services available and provided, coordination of information systems).
| TABLE 1. Characteristics of Survey Respondents, With and Without a Usual Source of Care (USC), Taichung County, Taiwan |
|---|---|---|---|---|
| **Gender** | No USC (n = 415–477) | USC (n = 323–405) | Total (n = 738–879) | Statistics |
| Male | 184 (58.0) | 133 (42.0) | 317 | $\chi^2 = 2.85$ |
| Female | 293 (52.1) | 269 (47.9) | 562 | |
| Total | 477 (54.3) | 402 (45.7) | 879 | |
| **Age (yr)** | | | | |
| <18 | 32 (32.0) | 68 (68.0) | 100 | $\chi^2 = 37.34^{*}$ |
| 18–44 | 324 (61.2) | 205 (38.8) | 529 | |
| 45–64 | 88 (47.6) | 97 (52.4) | 185 | |
| 65+ | 17 (39.5) | 26 (60.5) | 43 | |
| Total | 461 (53.8) | 396 (46.2) | 857 | |
| **Education** | | | | |
| Less than high school | 78 (44.3) | 98 (55.7) | 176 | $\chi^2 = 15.34^{†}$ |
| High school | 115 (51.3) | 109 (48.7) | 224 | |
| Some college | 164 (56.7) | 125 (43.3) | 289 | |
| More than or equal to college | 111 (64.2) | 62 (35.8) | 173 | |
| Total | 468 (54.3) | 394 (45.7) | 862 | |
| **Employment** | | | | |
| Full time | 245 (55.8) | 194 (44.2) | 439 | $\chi^2 = 6.12$ |
| Part time | 61 (62.9) | 36 (37.1) | 97 | |
| Unemployed | 94 (49.7) | 95 (50.3) | 189 | |
| Retired/in school/other | 71 (49.7) | 72 (50.3) | 143 | |
| Total | 471 (54.3) | 397 (45.7) | 868 | |
| **Household income (New Taiwan Dollar, NT$)** | | | | |
| <NT$ 650,000 | 93 (61.6) | 58 (38.4) | 151 | $\chi^2 = 4.88$ |
| $\geq$ NT$ 650,000–849,000 | 122 (57.8) | 89 (42.2) | 211 | |
| $\geq$ NT$ 850,000 | 72 (57.6) | 53 (42.4) | 125 | |
| Not sure/do not remember/refuse to answer | 128 (51.0) | 123 (49.0) | 251 | |
| Total | 415 (56.2) | 323 (43.8) | 738 | |
| **Health Status** | | | | |
| Excellent | 32 (53.3) | 28 (46.7) | 60 | $\chi^2 = 3.84$ |
| Very good | 130 (55.1) | 106 (44.9) | 236 | |
| Good | 118 (52.4) | 107 (47.6) | 225 | |
| Fair | 145 (50.3) | 143 (49.7) | 288 | |
| Poor | 9 (56.0) | 16 (44.0) | 25 | |
| Total | 434 (52.0) | 400 (48.0) | 834 | |
| **Physical/mental problem** | | | | |
| Yes | 34 (37.4) | 57 (62.6) | 91 | $\chi^2 = 11.2^{†}$ |
| No | 316 (52.8) | 282 (47.2) | 598 | |
| Not sure/do not remember | 84 (59.6) | 57 (40.4) | 141 | |
| Total | 434 (52.3) | 396 (47.7) | 830 | |
| **Additional private insurance** | | | | |
| Yes | 130 (48.3) | 139 (51.7) | 269 | $\chi^2 = 3.94$ |
| No | 147 (54.6) | 122 (45.4) | 269 | |
| Not sure/do not remember | 142 (56.6) | 109 (43.4) | 251 | |
| Total | 419 (53.1) | 370 (46.9) | 789 | |
| **Quality of care indicators, mean (SE)** | | | | |
| First contact (utilization) | 2.46 (0.86) | 3.12 (0.84) | 2.78 (0.91) | $t = 11.24^{‡}$ |
| First contact (access) | 2.14 (0.84) | 2.56 (0.71) | 2.34 (0.81) | $t = 7.83^{*}$ |
| Ongoing care | 2.33 (0.79) | 2.86 (0.68) | 2.58 (0.78) | $t = 10.41^{*}$ |
| Coordination (referrals) | 2.43 (0.77) | 2.87 (0.58) | 2.64 (0.72) | $t = 9.24^{*}$ |
| Coordination (information systems) | 2.45 (0.78) | 2.78 (1.01) | 2.61 (0.92) | $t = 5.37^{*}$ |
| Comprehensiveness (services available) | 2.39 (0.84) | 2.66 (0.71) | 2.52 (0.80) | $t = 4.99^{*}$ |
| Comprehensiveness (services provided) | 2.54 (0.77) | 2.86 (0.62) | 2.69 (0.72) | $t = 6.59^{*}$ |
| Family centeredness | 2.36 (0.85) | 2.93 (0.76) | 2.63 (0.86) | $t = 10.23^{*}$ |
| Community orientation | 2.04 (0.77) | 2.25 (0.67) | 2.14 (0.73) | $t = 4.24^{*}$ |
| Cultural competence | 2.35 (0.79) | 2.78 (0.62) | 2.56 (0.74) | $t = 8.71^{*}$ |
| Overall quality of medical care experience | 23.47 (6.21) | 27.68 (4.23) | 25.47 (5.76) | $t = 11.27^{*}$ |

*P < 0.001.
†P < 0.01.
‡P < 0.05.
In addition to USC, other covariates were also significantly associated with the overall quality of medical care, including patients’ age, household income, perceived health status, presence of a physical or mental health problem, and possession of additional private health insurance (results available upon request). Specifically, patients between the ages of 18 and 44 years reported lower quality of medical care than those aged 65 and over; those with higher income reported higher quality of care than those with lower income; those with better perceived health status reported higher quality of care than those with lower perceived health status; and those with additional private insurance coverage reported higher quality of care than those without additional coverage. Type of physician specialty was also examined, but there were no significant associations between any of the 9 primary care or specialty groups and overall quality of care.

**DISCUSSION**

This study used information collected from patient surveys in Taichung, Taiwan, to assess the association between having a USC and the quality of ambulatory medical care experiences. After adjusting for confounders, overall quality of care scores were significantly higher for patients with a USC than those without a USC. Our findings are consistent with previous studies that have examined the impact of USC on medical care access, quality, and health outcomes. However, our study is unique in that it was conducted in a region which provides universal health insurance coverage and which imposes no restrictions on provider selection. The results indicate that having a USC is significantly associated with higher quality of medical care experiences, even in an area with universal coverage.

Looking at specific quality of care attributes, patients with a USC reported higher quality experiences than patients without a USC for accessibility and utilization, ongoing care, coordination of referrals, and healthcare providers’ family centeredness and cultural competence. In contrast, differences between the 2 patient groups were less practically meaningful for other quality of care indicators, namely community orientation, comprehensiveness of services, and coordination of information systems. These latter indicators are more reflective of institutional and structural influences than the continuity of care between a provider and his/her patient.

The reader should consider several study limitations and exercise caution in interpreting the results. First, this study was conducted in 1 region and included a limited sample size, therefore generalizability of the findings to other regions is restricted. Second, there may be underlying differences between patient who choose a USC and those who choose not to have a USC, which account for differences in perceived quality of care. Indeed, our study showed that USC and no-USC patient groups differed regarding age distributions, education levels, and presence of physical or mental problems. Although we controlled for these differences in our regression analyses, there may be other differences which remained unaccounted for. Third, this study examined patients’ perceived quality of care experiences, rather than actual outcomes of medical care. In addition to the common concerns with recall and response set biases, patient-reported responses limit the inclusion of survey questions regarding the technical quality of medical care. However, self-reports are the only means of ascertaining patients’ actual health care experiences. Finally, the cross-sectional nature of the analysis limited our ability to make causal inferences from the findings.

Numerous studies have linked quality of care to better health outcomes, but further research is needed to examine how each of the quality of care indicators is related to specific health outcomes. Such research would help determine which practices and processes of care are best related to positive outcomes, to more efficiently use limited resources. Our study also has implications for health care policy in Taiwan. The sizable proportion of surveyed patients without a USC suggests that “shopping” for providers is prevalent, which may contribute to significant increases in medical utilization and expenditures. A more integrated referral sys-
tem featuring primary care doctors who serve as USC and gatekeepers might aid to curb utilization and expenditures, as well as enhance the quality of medical care experiences.

This study demonstrates that even in an area with universal health insurance, patients with a USC report higher quality of medical care experiences compared with those without a USC. Therefore, beyond the provision of health insurance coverage, efforts to improve quality of care should include policies promoting USC.

APPENDIX: PRIMARY CARE ASSESSMENT TOOL: INDICATORS AND ITEMS OF QUALITY OF MEDICAL CARE EXPERIENCES

(Note: Item responses consisted of a 4-point scale – 1 “Definitely not”; 2 “Probably not”; 3 “Probably”; 4 “Definitely”)

First Contact—Utilization
B1. When you need a regular general checkup, do you go to your PCP before going somewhere else?
B2. When you have a new health problem, do you go to your PCP before going somewhere else?
B3. When you have to see a specialist, does your PCP have to approve or give you a referral?

First Contact—Access
C3. When your PCP is open and you get sick, would someone from there see you the same day?
C4. When your PCP is open, can you get advice quickly over the phone if you need it?
C5. When your PCP is closed, is there a phone number you can call when you get sick?
C7. When your PCP is closed and you get sick during the night, would someone from there see you that night?

Ongoing Care
D1. When you go to your PCP’s, are you taken care of by the same doctor or nurse each time?
D4. If you have a question, can you call and talk to the doctor or nurse who knows you best?
D7. Does your PCP know you very well as a person, rather than as someone with a medical problem?
D9. Does your PCP know what problems are most important to you?

Coordination (Referrals)
E8. Did your PCP discuss with you different places you could have gone to get help with that problem?
E9. Did your PCP or someone working with your PCP help you make the appointment for that visit?
E10. Did your PCP write down any information for the specialist about the reason for the visit?
E12. After you went to the specialist or special service, did your PCP talk with you about what happened at the visit?

Coordination (Information Systems)
F1. When you go to your PCP, do you bring any of your own medical records, such as shot records or reports of medical care you had in the past?
F2. Could you look at your medical record if you wanted to?
F3. When you go to your PCP, is your medical record always available?

Comprehensiveness (Services Available)
Following is a list of services that [you/your child] or your family might need at some time. For each one, please indicate whether it is available at your PCP’s office.

G2. Immunizations (shots)
G6. Family planning or birth control methods
G8. Counseling for mental health problems
G10. Sewing up a cut that needs stitches

Comprehensiveness (Services Provided) (for Adults)
In visits to your PCP, are any of the following subjects discussed with you?

H1. Advice about healthy foods and unhealthy foods or getting enough sleep
H2. Home safety, like getting and checking smoke detectors and storing medicines safely
H4. Ways to handle family conflicts that may arise from time to time
H5. Advice about appropriate exercise for you
H7. Checking on and discussing the medications you are taking

Comprehensiveness (Services Provided) (for Children)
In visits to your child’s PCP, are any of the following subjects discussed with you and your child?

H1. Ways to keep your children healthy, such as nutritional foods or getting enough sleep
H2. Home safety, like using smoke detectors and storing medicines safely
H14. Ways to handle problems with your child’s behavior
H15. Changes in growth and behavior that you can expect at certain ages
H16. Safety issues for children under 6: teaching them to cross the street safely and using child safety seats in cars
H17. Safety issues for children between 6 and 12: teaching them to stay away from guns and to use seatbelts and bicycle helmets
H18. Safety issues for children over 12: teaching them about safe sex, saying no to drugs, and not drinking and driving

Family Centeredness
I1. Does your PCP ask you about your ideas and opinions when planning treatment and care for you or a family member?
I2. Has your PCP asked about illnesses or problems that might run in your family?
I3. Would your PCP meet with members of your family if you thought it would be helpful?

**Community Orientation**

J1. Does anyone at your PCP’s office ever make home visits?
J2. Does your PCP know about the important health problems of your neighborhood?
J3. Does your PCP get opinions and ideas from people that will help to provide better health care?

**Cultural Competence**

K1. Would you recommend your PCP to a friend or relative?
K2. Would you recommend your PCP to someone who does not speak English well?
K3. Would you recommend your PCP to someone who uses folk medicine, such as herbs or homemade medicines, or has special beliefs about health care?

**REFERENCES**