

Quality of primary care provided in community clinics in Japan

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Abstract

Background: Quality indicators (QIs) for primary care are used worldwide. To date, however, the use of QIs to assess the quality of primary care in Japan has not been reported besides diabetes care. Here, we used QIs to evaluate the quality of primary care services provided by local clinics in Japan.

Methods: Four primary care clinics participated in the retrospective medical chart review in 2015. To assess primary care quality, we used 18 process-oriented QIs from the Quality Indicators for Primary Care practice in Japan (QIPC-J) those we previously developed by using a modified Delphi appropriateness method, which comprises 39 QIs in five categories (Comprehensive care/Standardized care, Access, Communication, Coordination, and Understanding of patient's background). Adult subjects were selected from among patients who visited each clinic within the previous one year using medical claims data. We collected data by reviewing medical charts, and calculated the quality score for each QI and clinic.

Results: A cumulative total of 4330 medical charts were reviewed. The overall quality score was 31.5%. Adherence to QIs ranged from 3.2% to 85.6%. Some quality scores varied substantially between clinics but the overall quality of care among clinics varied less, from 29.2% to 34.0%.

Conclusions: The quality of primary care services provided by local clinics in Japan varies by both QI and clinic. Strategies to improve the quality of care are warranted.

KEYWORDS

local clinics, primary care, quality indicators, quality of health care

1 | INTRODUCTION

Numerous studies have shown that primary care contributes to improved population health, lower costs, and greater equity.¹⁻⁴ Therefore, primary care plays an increasingly important role in the healthcare system as the population ages rapidly and becomes more diversified.⁴

In Japan, universal health insurance covers almost 100% of the population and provides patients with free access to specialists

for a small out-of-pocket fee (JPY4000-8000).^{5,6} Primary care services are mainly provided by small medical facilities, such as small local community hospitals, clinics, and healthcare centers. Although Japanese universal health insurance has contributed to Japan's excellence in health indices,⁶ some have questioned the quality or efficiency of the country's medical care, especially those of primary care, while others have raised concerns about its sustainability under pressure from the rapidly aging population and

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increasing costs.^{7,8} Measuring and improving the quality of primary care are essential for ensuring high-quality and efficient care; however, small medical facilities are often left out of quality improvement activities compared to large hospitals. The quality of primary care in small medical facilities has therefore drawn increasingly close attention.³

Quality indicators (QIs) have been widely used to evaluate and improve the quality of care in various healthcare settings. QIs are explicitly defined, and measurable items include structures, processes, or outcomes of care. Several instruments have been used to specifically evaluate and improve the quality of primary care services, such as Quality Book of Tools (QBT),⁹ European Practice Assessment (EPA),¹⁰ and National Institute of Health and Care Excellence (NICE) indicators.¹¹

In Japan, QIs have been developed and measured for a variety of specific areas, such as acute myocardial infarction,¹² antibiotic use,¹³ chronic kidney diseases,¹⁴ and cancer care^{15,16} across hospitals. However, most QIs are specific to specialized care provided mainly by tertiary care hospitals,¹⁷ and are therefore unsuitable for the comprehensive measurement of primary care quality. Similarly, QIs for primary care clinics have been developed for diabetes care,^{18,19} but these can only be used to evaluate diabetes care.

To our knowledge, no study has yet evaluated the quality of primary care in small facilities by using QIs in Japan. The aim of this study was to assess the quality of primary care provided in community clinics in Japan using QIs.

2 | METHODS

2.1 | Study design and study sample

This study was a retrospective medical chart review. Participating primary care clinics were recruited nonrandomly in Hokkaido, Japan. The clinics were geographically dispersed throughout Hokkaido and were operated by the same organization. They also used the same electronic medical record (EMR) system. We used opt-out approach to recruit patients and doctors in the participating clinics. Prior to reviewing medical records, every participating clinic put a poster explaining the study and a website with additional information was set up in clinic homepage. Doctors were informed by the clinic directors about the study participation and their rights to opt out. We used medical claims data and medical records to list up to 100 consecutive adult patients who visited each consenting clinic within the previous one year (between July 2014 and June 2015) for each QI.

2.2 | Measures

2.2.1 | Quality indicators

To measure quality of primary care, we used 18 QIs that were process-oriented for this study. Since validated QIs for Japanese primary care setting had not been established at the time of the study, the 18 QIs were selected from those we previously

developed by using a modified Delphi appropriateness method, a standard method for developing QIs,²⁰ based on a conceptual framework. Briefly, seven primary care physicians and seven nonphysician health care professionals in community primary care settings separately participated in focus group interviews to develop a conceptual framework of the quality of primary care in Japan. Seven categories (Comprehensive care, Standardized care, Access, Communication, Coordination, Understanding of patient's background, and Contribution to the local community) were extracted from the focus group interviews as key components of quality of primary care in Japan.

Based on a literature review of clinical guidelines and previously developed QIs for primary care settings, 159 possible QIs were extracted to fit into the seven categories. Expert panel members (10 primary care physicians and three allied health care professionals) rated each indicator's validity. After a face-to-face discussion in September 2013 and a second round of ratings by the expert panel, 72 QIs were extracted. Through subsequent discussions, 42 QIs among five categories were developed: Comprehensive care/Standardized care, Access, Communication, Coordination, and Understanding of patient's background. After a pilot test focused on data extraction and time efforts, 39 QIs among the five categories were established as a set of QIs, called the Primary Care Practice in Japan (QIPC-J)²¹ (Appendix). Data resources of the QIs were medical claims data, medical chart reviews, and patient surveys. The QIs that were used for this study were 17 QIs in Comprehensive care/Standardized care and one QI in Understanding of patient's background categories, and those were measurable using data resources other than patient survey.

2.2.2 | Medical chart reviews

Medical chart reviews were completed between July and November 2015 together by two trained research nurses and one clerk in accordance with a written guideline. In case of difficult judging, the reviewers had discussed it with the principal investigator.

2.3 | Data analysis

Patients who were eligible for that indicator were recorded as the denominator (QIs triggered) for each QI. Patients were considered ineligible for the QI if they met prespecified exclusion criteria for a specific indicator. The numerator was constructed by calculating the number of eligible patients whose care met the specified QI (QIs passed). Quality score (%), or percent adherence, was calculated for each QI and all QIs using these numerator and denominator.^{22,23}

2.4 | Ethical approval

All research protocols were reviewed and approved by the institutional review board of the National Hospital Organization Tokyo Medical Center.

TABLE 1 Overall adherence to quality indicators

QI categories and details		QIs triggered	QIs passed	Quality score (95% CI)
		N	N	%
Comprehensive care/Standardized care				
1	For a patient on antihypertensive diuretics for more than one year, all of the following are checked during the previous year: serum potassium, creatinine, eGFR, and lipid profile.	250	94	37.6 (31.6-44.0)
2	For a newly diagnosed hypertensive patient, all of the following are documented at the first visit: presence or absence of diabetes, hyperlipidemia, and heart murmur.	206	29	14.1 (9.6-19.6)
3	For a hypertensive patient receiving pharmacotherapy, counseling for at least one of the following lifestyle modifications is offered during the previous year: weight reduction, exercise, dietary calorie restriction, dietary sodium restriction, and alcohol restriction.	398	89	22.4 (18.4-26.8)
4	For a hypertensive patient, home blood pressure readings are documented in the records.	396	210	53.0 (47.9-58.0)
5	For a diabetic patient, blood pressure readings are documented at every visit.	197	155	78.7 (72.3-84.2)
6	For a diabetic patient not receiving pharmacotherapy, urinary protein (or microalbumin level) is examined during the previous year.	160	92	57.5 (49.4-65.3)
7	Medical record documents are collected, results of an eye examination by an ophthalmologist are obtained, or a referral to an ophthalmologist is given at least once during the previous year.	197	42	21.3 (15.8-27.7)
8	For a diabetic patient, diabetic neuropathy screening using monofilament or vibration is performed during the previous year.	197	13	6.6 (3.6-11.0)
9	For an asthmatic patient, peak expiratory flow rate readings for the past year are recorded.	62	2	3.2 (0.4-11.1)
10	For an asthmatic patient who uses a beta-2 agonist inhaler daily, an inhaled steroid is prescribed.	69	59	85.6 (75.0-92.8)
11	For a patient with a newly diagnosed headache, how the symptom started (acute or chronic) is documented.	213	119	55.9 (48.9-62.6)
12	For a patient with newly diagnosed low back pain, the presence or absence of cauda equina syndrome is documented.	343	32	9.3 (6.5-12.9)
13	For a dementia patient older than 75 years, the main caregiver is identified and documented in the previous year.	91	22	24.2 (15.8-34.3)
14	For a patient with hypertension or dyslipidemia who visits the clinic more than four times in a year, a complete list of current medications including those prescribed by other medical facilities is documented.	354	75	21.2 (17.0-25.8)
15	For all adult patients, smoking habits during the previous year are documented.	371	87	23.5 (19.2-28.1)
16	For a smoking patient, smoking cessation intervention is offered within the previous two years.	60	15	25.0 (14.7-37.9)
17	For all patients older than 65 years, pneumococcal vaccination history is documented.	389	18	4.6 (2.8-7.2)
Understanding of patient's background				
18	For an adult patient who makes regular clinic visits, his/her occupation, role in daily life, and who he/she lives with are documented.	377	212	56.2 (51.1-61.3)

MCD; medical claims data; MCR; medical chart reviews; PS; patient surveys.

3 | RESULTS

Medical chart reviews were completed in four clinics. None of the expert panel member physicians were belonging to the participating clinics. A cumulative total of 4330 medical charts were

reviewed (average 1082, range 873-1315 charts in each clinic). Table 1 shows adherence to each QI. The overall quality score was 31.5%.

Adherence to individual QIs varied greatly, from nearly 85% for prescribing inhaled steroids to asthmatic patients with short-acting

TABLE 2 Variation in quality score among participating clinics

QI	Brief description	Clinic A			Clinic B			Clinic C			Clinic D		
		No. of QI triggered	No. of QI passed	Quality score (%)	No. of QI triggered	No. of QI passed	Quality score (%)	No. of QI triggered	No. of QI passed	Quality score (%)	No. of QI triggered	No. of QI passed	Quality score (%)
1	Side effect monitoring in hypertensive medications	18	10	55.6	32	25	78.1	100	31	31.0	100	28	28.0
2	Newly diagnosed hypertension	46	0	0.0	100	3	3.0	34	0	0.0	26	26	100.0
3	Lifestyle modification	99	15	15.2	100	21	21.0	100	32	32.0	99	21	21.2
4	Home BP in hypertension	100	68	68.0	98	53	54.1	100	51	51.0	98	38	38.8
5	Diabetes	21	20	95.2	20	17	85.0	95	57	60.0	61	61	100.0
6	Urinary protein check in diabetes	8	5	62.5	16	5	31.3	100	51	51.0	36	31	86.1
7	Annual eye examination in diabetes	21	1	4.8	20	8	40.0	95	19	20.0	61	14	23.0
8	Diabetic neuropathy screening	21	0	0.0	20	10	50.0	95	3	3.2	61	0	0.0
9	PEF in asthma	6	0	0.0	14	2	14.3	26	0	0.0	16	0	0.0
10	Inhaled steroid for asthma	2	2	100.0	30	24	80.0	20	19	95.0	17	14	82.4
11	Headache	54	36	66.7	80	44	55.0	48	20	41.7	31	19	61.3
12	Low back pain	81	3	3.7	98	21	21.4	80	1	1.3	84	7	8.3
13	Identify main caregiver of dementia patient	32	4	12.5	22	3	13.6	20	2	10.0	17	13	76.5
14	List of medications	54	11	20.4	100	24	24.0	100	25	25.0	100	15	15.0
15	Smoking habits	100	26	26.0	100	27	27.0	89	21	23.6	82	13	15.9
16	Smoking cessation	26	3	11.5	19	2	10.5	7	5	71.4	8	5	62.5
17	Pneumococcal vaccination	100	1	1.0	100	4	4.0	98	4	4.1	91	9	9.9
18	Patient's background	84	55	65.5	100	70	70.0	95	39	41.1	98	48	49.0

PEF, peak expiratory flow.

beta 2 agonist inhalers daily (QI #10), to only 3.2% for recording peak expiratory flow rate readings within 1 year in bronchial asthma patients (QI #9) (Table 1).

Adherence to QIs in the Comprehensive care/Standardized care category was ranged from 3.2% to 85.6% and that in the Understanding of patient's background was 56.2%. The variation in overall quality scores among clinics was small, ranging from 29.5% to 34.0%.

Disparity among clinics was greater for some QIs than others (Table 2). Quality score of the QI for the systematic evaluation of newly diagnosed hypertensive patients (QI #2) was ranged from 3% to 100%. For identification of dementia patients' main caregiver (QI #13), quality score was ranged from 10% to 76.5%.

4 | DISCUSSION

We evaluated the quality of primary care in community-based clinics in Japan using QIs. Overall, only about one-third of the recommended care was delivered to patients. Although the importance of primary care in local communities has increased, the degree to which primary care in local clinics is consistent with basic quality standards has been unclear. Such disparities associated with recommended care are widely reported^{23,24} and comprise what is known as the "evidence-practice gap".²⁵ Therefore, measuring the "gap" is an essential first step toward improving the quality of primary care. McGlynn et al²³ reported that patients in the United States received only about half the recommended care processes. In Japan, about 40% of recommended care is reportedly not provided in hospital ambulatory primary care settings.²⁶

We found similar adherence rates to those of corresponding QIs in hospital ambulatory primary care settings in Japan, 2004-2007²⁶: taking smoking status information (23.5% vs 24%) and prescribing inhaled steroids to asthmatic patients with daily short-acting beta 2 agonist inhalers (85.5% vs 82%). Adherence to the QI of annual eye examinations in diabetes patients was higher than that shown in primary care settings in Japan (21.3% vs 12.4%-13.9%),¹⁸ but was similar to the 20.8% adherence shown for National Health Insurance claims data.²⁷

Adherence to pneumococcal vaccination history documentation was very low (4.6%). Since the routine pneumococcal vaccination program for the elderly was started in 2014 in Japan, vaccination rates among adults older than 65 years have increased, reaching 33% in 2016.²⁸ A previous study reported that there is a large disparity between vaccination documentation and actual patient vaccination.²³ Given that pneumococcal vaccinations are recommended every 5 years, reliable documentation of vaccination history is important for adherence to vaccination.

The number of eligible QIs and quality of care varied substantially among clinics. Previous studies have reported a similarly large variation in the number of eligible QIs,²³ although the variation in the present study might be explained by differences in clinic characteristics. Nonphysician medical staff may play an

important role in the high variation of some QI scores among clinics. Given that the mean consultation time for a patient visit is only 6.16 minutes in Japanese clinics,²⁹ physicians may not have enough time to take a thorough past history or to conduct an interview to identify the main caregiver of a dementia patient. Further studies are needed to explain the interclinic variation to improve quality of care.

One possible explanation for the wide variation in quality observed in this study may be the lack of monitoring systems for quality of care in clinics in Japan. One effective intervention to reduce the "evidence-practice gap" may be to modify physicians' practice behavior, which will require audit and feedback.³⁰ A systematic review indicated that feedback may be more effective when baseline performance is low, when feedback is provided more than once, and when it includes both explicit targets and an action plan.³⁰ Audit and feedback may be used on their own or as a component of multifaceted quality improvement interventions. A previous study showed that a multifaceted intervention using audit and feedback improved quality of care in diabetes patients in a primary practice setting in Japan.¹⁸ Further studies are needed to evaluate their effectiveness in improving quality of primary care.

Our study has several limitations. First, our findings are limited to samples from only four clinics in Hokkaido, Japan; a larger sample of clinics might show different results. Second, although the participating clinics were primary care clinics with a few physicians, physicians' specialty and patients' characteristics might have influenced the results. Given that patients have free access to physicians, some are expected to choose clinics with physicians with their preferred specialties. We did not collect information on the physicians' backgrounds or the patients' characteristics because of confidentiality. Third, the use of EMRs might have affected the results. While 35.0% of clinics use an EMR system in Japan,³¹ all participating clinics in the present study used the same EMR system. Although EMR systems in clinics do not usually include functionality to help physicians maintain a high quality of care, it is possible to customize them, such as adding useful templates for smoking status or critical vaccination history. As EMR use in clinics increases, EMR systems should be improved to be more useful for quality improvement. Fourth, no validated QIs for Japanese primary care setting had been established at the time of the study, and we used QIs which were developed based on a standard method for developing QIs but not yet validated. Finally, adherence rates were derived only from information available from medical records; nevertheless, while medical records have been shown to be an imperfect reflection of actual care provided,^{32,33} poor documentation is itself correlated with a poor process of care.³⁴

In summary, we found that quality of care in primary care clinics in Japan varied, even among the few clinics examined. Future studies should focus on timely, ongoing monitoring, effective feedback at a large scale, and sound quality improvement interventions in primary care clinics.

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CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

ETHICS APPROVAL

All research protocols were reviewed and approved by the institutional review board of the National Hospital Organization Tokyo Medical Center.

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APPENDIX

Primary Care Practice in Japan (QIPC-J)

Category	Description of QIs	Resources
Comprehensive care/standardized care		
1	Chronic disease management (hypertension)	MCD
2	Chronic disease management (newly diagnosed hypertension)	MCR
3	Chronic disease management (lifestyle modification)	MCR
4	Chronic disease management (hypertension)	MCR
5	Chronic disease management (diabetes)	MCR
6	Chronic disease management (urinary protein check in diabetes)	MCD
7	Chronic disease management (annual eye examination in diabetes)	MCR
8	Chronic disease management (diabetic neuropathy screening)	MCR
9	Chronic disease management (peak expiratory flow rate readings in asthma)	MCR
10	Chronic disease management (an inhaled steroid for asthma)	MCR
11	Emergency care (headache)	MCR
12	Emergency care (low back pain)	MCR
13	Chronic disease management (identify main caregiver of dementia patient)	MCR
14	Complete list of current medications in chronic disease patient	MCR
15	Smoking habits	MCR
16	Smoking cessation	MCR
17	Pneumococcal vaccination	MCR
18	Baby immunization	PS
19	Monitoring of out-of-office care	PS

(Continues)

APPENDIX (Continued)

Category	Description of QIs	Resources
Access		
1	Out-of-hours care	PS
2	Response to medical conditions other than current monitoring care	PS
3	Timely access to medical history	PS
Communication		
1	Informed decision making	PS
2	Respect for patient preferences	PS
3	Respect for patient lifestyle	PS
4	plain explanation of medications	PS
5	Respect for patient privacy.	PS
6	Friendliness of clinic's staff.	PS
7	Encourage patient to ask health problem	PS
8	Sincere and honest attitude to patient's health problems.	PS
Coordination		
1	Helping identifying specialists	PS
2	Prepare a referral letter to specialists	PS
3	Helping patient understanding specialist's explanation	PS
Understanding of patient's background		
1	Patient's occupation, role in daily life and with whom his/her lives	MCR
2	Consideration of patient's cost	PS
3	Understanding patient's role in social life	PS
4	Understanding patient's beliefs and values	PS
5	Consideration of the local community	PS
6	Encourage patient self-management	PS

MCD; medical claims data, MCR; medical chart reviews, PS; patient surveys.