



ORIGINAL ARTICLE

Relationship between the presence of primary care physicians and health-related quality of life

Daiki Yokokawa MD, PhD¹  | Yoshiyuki Ohira MD, PhD^{1,2} | Akiko Ikegami MD, PhD¹ | Kiyoshi Shikino MD, PhD¹  | Tomoko Tsukamoto MD, PhD¹ | Kazutaka Noda MD, PhD¹ | Takanori Uehara MD, PhD¹ | Masatomi Ikusaka MD, PhD¹

¹Department of General Medicine, Chiba University Hospital, Chiba City, Japan

²Department of General Medicine, School of Medicine, International University of Health and Welfare, Chiba, Japan

Correspondence

Daiki Yokokawa, MD, PhD, Department of General Medicine, Chiba University Hospital, 1-8-1 Inohana, Chuo-ku, Chiba City, Chiba 260-8677, Japan.
E-mail: dyokokawa6@gmail.com

Funding information

This work was supported by the Japan Society for the Promotion of Science (JSPS) "INSPIRING SCIENCE." See 25870132 (grant number). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript

Abstract

Background: The supply of primary care physicians is associated with better health outcomes and a lower total cost of health services. However, the effect of the presence or absence of primary care physicians on health-related quality of life (QOL) is unknown. We comparatively investigated the health-related QOL of ordinary citizens according to the presence or absence of a primary care physician.

Methods: We conducted an observational cross-sectional study using a propensity score analysis. A questionnaire on health-related QOL (SF-36v2, age, gender, presence or absence of a primary care physician, and chronic disease status) was mailed to 2200 individuals identified through stratified random sampling. We used propensity scores to compensate for covariates and analyzed three component SF-36 summary scores and subscale scores of the "primary care physician" and "no primary care physician" groups.

Results: Valid responses were received from 1095 individuals (49.8%). The "primary care physician group" comprised 653 individuals (59.6%). The physical health component scores of the "primary care physician group" were significantly lower than those of the "no primary care physician group," and the "mental health component" scores were significantly higher ($p = 0.032$, $p = 0.009$). For the subscales, scores for "vitality" and "mental health" were significantly higher in the "primary care physician group" ($p = 0.014$, $p = 0.018$).

Conclusions: Patients who had a primary care physician with whom they could comfortably consult at any time had a high mental health component score, and low physical health component score in the health-related QOL.

KEYWORDS

health policy, health services research, primary care issues, social factors in health

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2021 The Authors. *Journal of General and Family Medicine* published by John Wiley & Sons Australia, Ltd on behalf of Japan Primary Care Association.

1 | BACKGROUND

1.1 | The presence of primary care physicians in Japan and other countries

Currently, fewer people in Japan have a primary care physician than in Western countries, although a simple comparison is difficult because of differences in medical systems. In Japan, approximately 50–70% of people have a primary care physician.^{1–4} Regarding the primary care physician system of different countries, citizens in the United Kingdom, in particular, register with a local General Practitioner (GP) under the National Health Service (NHS). Under this program, they receive their initial consultation with their registered GP at a medical institution.⁵ In France, the primary care physician system was introduced in 2005, whereas the majority of citizens in Germany, the Netherlands, and Denmark have also been maintaining a primary care physician.⁵ In comparison, fields of specialization and qualifications possessed by primary care physicians in Japan are diverse. This is because many primary care physicians choose to work in their said capacity after specializing in a particular field of medicine. Moreover, primary care physicians work in not only clinics, but also in large hospitals.

The supply of primary care physicians has been associated with better health outcomes and a lower total cost of health services.⁶ The following are the benefits of having a primary care physician: (1) being able to speak comfortably with one's doctor; (2) having a continued care from the same doctor, which improves the possibility of that doctor noticing minor changes, possibly leading to earlier disease detection; (3) developing a trusting relationship, which improves mutual understanding; (4) having a comparison with earlier tests, reducing the need for unnecessary testing; and (5) having an easier access to a referral when needed.^{7–8} Furthermore, our previous study has shown that after getting introduced to a primary care physician by a referral from a university hospital, 70% of the patients continue to visit the hospital and were reported to be satisfied because of the easy-to-consult atmosphere and reduced anxiety.⁹

1.2 | Issues specific to Japan and impact on QOL

The Japanese National Health Insurance system economically and systematically guarantees free access to medical institutions,¹⁰ making it possible to receive a medical consultation at one's desired medical institution at any time. Patients are free to choose where to receive medical care, whether at a primary care physician or a physician in a university hospital. However, some individuals receive consultation for the same complaint at numerous medical institutions without a referral, and others employ their own judgment in visiting different medical institutions depending on the complaint.¹¹ This is disadvantageous to patients in terms of redundant test and prescription, and a factor in spiraling healthcare expenditure. Moreover, many patients without a primary care physician attend secondary or

tertiary referral hospitals directly, causing undue burden on hospital doctors.¹² Consequently, being unable to provide adequate care to patients needing advanced medical care is an issue.

However, to our knowledge, research reporting on the effects of engaging a primary care physician on citizens' health is lacking. Although primary care physicians have been reported to be associated with health-related QOL in certain patient groups,¹³ the association between the presence or absence of primary care physicians in the general population and QOL is unclear. Thus, we comparatively investigated the health-related quality of life (QOL) of ordinary citizens according to the presence or absence of a primary care physician.

2 | METHODS

2.1 | Design

A cross-sectional observational study.

2.2 | Setting

The subjects of this study were Japanese adults. Since the sampling of subjects is limited to viewing the "Residential Basic Book" by law, and it is difficult for researchers to view the resident card nationwide, we approached a research firm (Central Research Co., Ltd.). The research firm holds data of subjects randomly selected from the entire Japanese adult population based on residential maps, etc., which we used. The role of the research company in this study was to sample the subjects, mail them, consolidate data, and send rewards.

2.3 | Participants

We conducted stratified random sampling according to place of residence using the research firm's sample as the population in order to control the selection bias. The criterion for inclusion in this study is that the subjects must be adults with a residential address in Japan in the data held by the research firm. Random sampling of the subjects was performed by the research firm. With a sampling error of 3%, a 95% confidence level, and 0.5 response ratio $n = z_{\alpha/2}^2 p(1-p)/d^2$, the required sample size was 1068 participants (n : sampling size, d : sampling error, z : the upper 100% point of the standard normal distribution, α : confidence level, p : response ratio). The persons from whom responses were either not received or had missing data were excluded from the study. The response rate for the mail survey was predicted to be 50%; thus, the number of participants was set at 2200. Japan was divided into ten regions, with participant numbers distributed by region according to the population ratio. Ordinance-designated cities with a population of 500,000 or more and the wards of Tokyo are treated as the 21 large cities. Based on this, we performed stratified random sampling according to region.

Participants were asked questions regarding their health-related QOL. A questionnaire was sent by post in September 2013. It included additional questions on age, gender, presence or absence of primary care physician, and presence or absence of regular outpatient consultations at medical institutions. The term primary care physician was defined based on the literature as "a familiar doctor with whom you are comfortable discussing health and illness regardless of discipline."⁷⁻⁸ In Japan, many doctors practicing as primary care physicians have prior experience as organ specialists and hospital doctors. Therefore, since it is expected that their fields of specialization, qualifications, years of practice, and medical skills would be diverse, in this study, the definition of primary care physician focuses on communication ability, which patients can judge. The collection of responses lasted two weeks from the date of posting. To improve the response rate, we offered a small incentive (approximate value of \$5 USD) to respondents when the questionnaires were posted and sent a single reminder thereafter. Table 1 shows numbers of people surveyed within each region.

2.4 | Variables and measurement

The Japanese version (SF-36v2) of the internationally known MOS 36-Item Short-Form Health Survey (SF-36), the reliability and validity of which have been scientifically verified, was used to measure health-related QOL.¹⁴⁻¹⁶ SF-36 is a questionnaire consisting of 36 items in 11 categories. SF-36 is not limited to a specific disease but is based on a universal concept of health. It can measure the quality of life of patients with various diseases and healthy people who are not ill. Items on the SF-36 with higher scores indicate better health conditions.

Respondents were divided into the "primary care physician group" or "no primary care physician group." We compared the

SF-36 three component summary scores and subscale scores for both groups based on national norms. Moreover, since age, gender, presence or absence of regular outpatient consultations for chronic disease, and residential city scale could influence the SF-36v2 scores, the covariates were compensated for using a propensity score comprised of these four items. Occupation, final education, marital status and annual household income, which are not considered to affect the national standard value of SF-36v2, were not included in this study.

2.5 | Statistical methods

Among the valid respondents, we sought the propensity scores for the presence or absence of a primary care physician through a logistic regression using participants' age, gender, presence or absence of regular outpatient consultations for chronic disease, and residential city scale as covariates. We did not use propensity score matching because we feared it would reduce the sample size. We also created a ROC curve to determine the c statistic to investigate strongly ignorable treatment assignment. Employing an analysis of covariance (ANCOVA) with the calculated propensity score as a covariate and the presence or absence of primary care physician as a fixed factor, we compared the SF-36v2 three component summary scores and subscales for the "primary care physician group" and "no primary care physician group."

All statistical analyses were conducted using SPSS Statistics for Windows 25.0, and the significance level was set at below 5% for all analyses. This work was supported by the Japan Society for the Promotion of Science (JSPS) "INSPIRING SCIENCE." See 25870132 (grant number). This study was approved by the Ethical Committee, Graduate School of Medicine, Chiba University (No. 1709).

TABLE 1 Numbers of people surveyed within each region

	Number of people surveyed (number of populations, ratio (ppm))			
	Size of municipality			
District	21 large cities	Other cities	Towns	Total
Hokkaido	35 (1,593,181, 22.0)	43 (2,106,225, 20.4)	18 (874,973, 20.6)	96 (4,574,379, 21.0)
Tohoku	17 (835,068, 20.4)	110 (5,278,655, 20.8)	32 (1,509,691, 21.2)	159 (7,623,414, 20.9)
Kanto	293 (13,761,515, 21.3)	405 (19,177,961, 21.1)	33 (1,642,738, 20.1)	731 (34,582,214, 21.1)
Koshin-Etsu	13 (661,251, 19.7)	67 (3,196,523, 21.0)	13 (544,092, 23.9)	93 (4,401,866, 21.1)
Hokuriku		47 (2,197,783, 21.4)	4 (292,058, 13.7)	51 (2,489,841, 20.5)
Tokai	64 (3,029,552, 21.1)	173 (8,112,282, 21.3)	22 (959,717, 22.9)	259 (12,101,551, 21.4)
Kinki	110 (5,206,596, 21.1)	225 (10,631,426, 21.2)	22 (989,800, 22.2)	357 (16,827,822, 21.2)
Chugoku	32 (1,494,950, 21.4)	88 (4,156,857, 21.2)	13 (503,952, 25.8)	133 (6,155,759, 21.6)
Shikoku		58 (2,751,807, 21.1)	13 (546,723, 23.8)	71 (3,298,530, 21.5)
Kyushu	54 (2,542,196, 21.2)	160 (7,591,870, 21.1)	36 (1,694,819, 21.2)	250 (11,828,885, 21.1)
Total	618 (29,124,309, 21.2)	1376 (65,201,389, 21.1)	206 (9,558,563, 21.6)	2200 (103,884,261, 21.2)

Note: We conducted stratified random sampling according to place of residence using the research firm's sample as the population in order to control the selection bias. 21 Large cities, Ordinance-designated cities with a population of 500,000 or more and the wards of Tokyo.

3 | RESULTS

Regarding the number of responses, 1207 of the 2200 respondents responded (54.9%). We have excluded 112 people (5.1%) whose responses had missing data. Ultimately, 1095 valid responses were collected (49.8%) (Figure 1). Table 2 outlines the baseline of participants. Of the 1095 valid responses, 653 (59.6%) engaged a primary care physician. The propensity score *c* statistic was 0.812. Tables 2 and 3 provide the results of the ANCOVA after covariance adjustment according to the propensity score. For the three component summary scores (Table 3), the “primary care physician group” scored significantly lower for the physical health component and significantly higher for the mental health component than the “no primary care physician group” (−1.5 (95% confidence interval (CI), −2.8 to −0.1) and 1.8 (95%CI, 0.4 to 3.2)). For the subscales (Table 4), the “primary care physician group” had significantly higher scores for

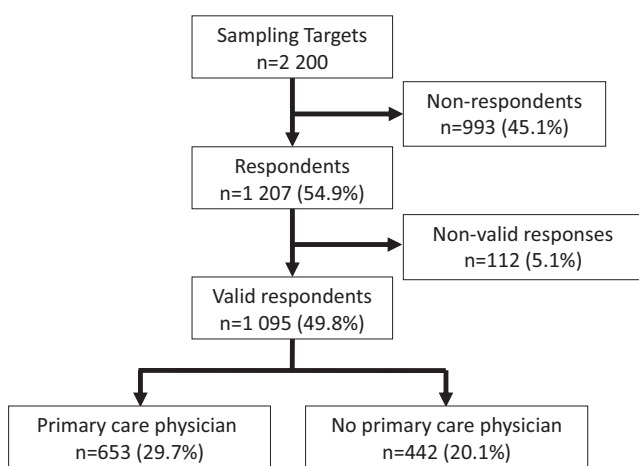


FIGURE 1 Participants flow

	(N = 1095) Valid respondents		p-value
	Primary care physician N (%)	No primary care physician N (%)	
Total	653 (59.6)	442 (40.4)	
Female	366 (56.0)	220 (49.8)	0.041 ^a
Age, average (SD)	59.1 (15.6)	45.1 (14.7)	<0.001 ^b
Regular outpatient	464 (71.1)	87 (19.7)	<0.001 ^a
Size of municipality			
21 large cities	188 (28.8)	110 (24.9)	0.144 ^a
Other cities	414 (63.4)	285 (64.5)	
Towns	51 (7.8)	47 (10.6)	

Note: 21 Large cities, Ordinance-designated cities with a population of 500,000 or more and the wards of Tokyo

Abbreviation: SD, standard deviation.

^aChi-square test.

^bUnpaired *t*-test.

“vitality” and “mental health” than the “no primary care physician group” (1.8 (95%CI, 0.4 to 3.3) and 1.7 (95%CI, 0.3 to 3.1)).

4 | DISCUSSION

This research is the first to compare health-related QOL according to the presence or absence of a primary care physician. The comparatively higher health-related QOL “mental health component” scores and lower “physical health component” scores of the “primary care physician group” compared to those of the “no primary care physician group” were clearly indicated through the adjustment of age, gender, presence, or absence of regular outpatient consultations for chronic disease and residential city scale based on the propensity score.

The physical component score of the “primary care physician group” was lower than that of the “no primary care physician group.” Since Japan’s medical system guarantees free access,¹⁰ patients can visit their favorite medical institution at any time. In other words, persons who do not have a chronic illness or a physical ailment need not necessarily have a primary care physician. They can choose a medical institution to visit as necessary. Our results suggest that individuals with physical ailments may be in touch with a primary care physician to comfortably discuss health matters, such as common cold or hay fever. No significant difference was found for the “primary care physician group” for the physical health component subscales: “physical functioning,” “role physical,” “bodily pain,” “general health,” and “social functioning.” We believe that the low scores for “physical health component” reflect these score differences (Table 4).

Furthermore, compared to the “no primary care physician group,” the health-related QOL “mental health component” scores and mental health component subscales of vitality and mental health were higher for the “primary care physician group.” Numerous articles

TABLE 2 Baseline of participants

TABLE 3 Analysis of variance (ANOVA) after covariate adjustment according to propensity score (3 Component Summary Score)

	Score		Difference between average value ^a	95% confidence interval	p-value	Effect size (d)
	Primary care physician	No primary care physician				
Physical health component	48.9	50.3	-1.5	-2.8 to -0.1	0.032	0.62
Mental health component	51.0	49.2	1.8	0.4 to 3.2	0.009	0.70
Role/Social component	49.2	48.7	0.2	-1.1 to 2.1	0.51	0.02

^a“Primary Care Physician” - “No primary care physician”.

TABLE 4 Analysis of variance (ANOVA) after covariate adjustment according to propensity score (subscales)

	Score		Difference between average value ^a	95% confidence interval	p-value	Effect size (d)
	Primary care physician	No primary care physician				
Physical functioning	49.7	50.3	-0.6	-1.9 to 0.8	0.43	0.46
Role functioning (Physical)	48.6	48.7	-0.1	-1.6 to 1.4	0.91	0.33
Bodily pain	48.7	49.4	-0.8	-2.2 to 0.7	0.29	0.25
General Health	50.3	49.6	0.6	-0.7 to 2.0	0.34	0.29
Vitality	50.3	48.4	1.8	0.4 to 3.3	0.014	0.13
Social functioning	50.2	49.5	0.4	-0.7 to 2.1	0.33	0.07
Role functioning (Emotional)	48.9	48.4	0.5	-1.0 to 2.0	0.50	0.12
Mental Health	50.9	49.2	1.7	0.3 to 3.1	0.018	0.14

^a“Primary care physician” - “No primary care physician”.

associate the doctor-patient relationship and health-related QOL. In one study, vitality increased after sharing the patient's physical functioning between the doctor and patient.¹⁷ In addition, effective sharing of information on diagnosis and treatment between doctor and patient improves health-related QOL, regardless of the patient's level of education.¹⁸ Further, patients having high continuity in the care group had high “mental health component” scores.¹³ Here, we considered it possible that vitality would improve through patients engaging with a primary care physician who understood their health issues and treatment.

In this study, the definition of a primary care physician focuses on communication skills. In other words, this study does not evaluate the physician's field of specialization, qualifications, years of practice, or medical skills/knowledge. If these factors are added to the definition of a primary care physician, there may be significant differences in the physical aspects and their subscales in the results of this study. Therefore, as the definition of primary care physician in this study emphasizes communication skills, it may reduce patients' anxiety or influence their satisfaction, thus possibly affecting the scores of the mental health components in this study. However, this study does not evaluate such a bias.

Research on patients with breast cancer reported improved QOL scores (Functional Assessment of Cancer Therapy-Breast) for these patients resulting from improved doctor-patient relations after doctors expressed patient-directed compassion and concern, and

honestly explained the results.¹⁹ Patient-physician interaction has been reported to be correlated with health outcomes, patient satisfaction, and medication adherence.²⁰ Our previous research, “An investigation into the efficacy of implementing a primary care physician system in University Hospital Outpatient Clinics”,⁹ revealed that 70% of patients assigned a primary care physician continued to be seen by that doctor and were satisfied with their doctor. The reasons included the doctor's friendly demeanor and reduced anxiety after a medical examination. In addition, improved mental health may result from being able to comfortably discuss one's own health concerns, having built a good relationship with the primary care physician. Furthermore, primary care has a prevalence rate of 22-29% of medically unexplained symptoms (MUS).²¹ For MUS patients, multiple mental, physical, and social factors interact to form symptoms. However, the behavior patterns influenced by these symptoms and the symptoms themselves change in the context of the patient-doctor relationship. One study²² reported that the health-related QOL (mental component summary) of MUS patients improved significantly after a multi-dimensional intervention by primary care physicians considering personal aspects of the MUS patient. Engagement of a primary care physician who knows the patient may contribute to addressing the medical treatment costs associated with MUS patients attending medical institutions. Patients with physical ailments may be mentally satisfied by communicating with their primary care physician.

4.1 | Limitations

We have some limitations of this study. First, there was a response bias. The response rate from 2200 participants was 49.8%. However, possibly, most of the respondent group had no trust issues regarding medical institutions and had the time and social capability to complete the questionnaire. Thus, the sample group may not be representative of the general population. Therefore, we believe that the generalizability of the results of this study is limited. Nonetheless, given that the responses in this study had a propensity score of 0.812, with age, gender, presence or absence of regular outpatient consultations for chronic disease, and residential city scale adjusted for as covariates, even if this bias existed, the presence or absence of a primary care physician can be considered an independent factor in QOL difference. Second, this study may miss some important confounders (e.g., socioeconomic status, other differences in health status between groups). Although the presence or absence of chronic diseases was surveyed, the prevalence of chronic diseases (type and extent of a disease and duration of the illness) could not be surveyed. Hence, the possibility that they were potential mediator or moderator variables cannot be mentioned in this study. Third, there is a limitation of the cross-sectional design, where it is impossible to tell whether the exposure (primary care physician) occurred before the outcome (quality of life), so we may be picking up reverse causality here. Fourth, this study was conducted in Japan, limiting the generalizability of this study to other countries with different primary care systems and definitions. Care must be taken in the practical application of the results of this study. We hope our efforts encourage much needed future research specifically designed to introduce primary care physicians to overcome these limitations. Fifth, this study cannot mention clinically important differences (CID); previous reports of CID for SF-36v2 have defined summary scores of 5 as the Minimum CID in asthmatics and underlying diseases such as COPD,²³ orthopedic tumors,²⁴ cervical myelopathy,²⁵ and diabetes.²⁶ In this study, the difference in the summary score between patients with and without PCP was small, ranging from 1.5 to 1.8.

5 | CONCLUSION

Patients who had a primary care physician with whom they could comfortably consult at any time had a high mental health component score, and low physical health component score in the health-related QOL.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTERESTS

Yoshiyuki Ohira, the Japan Society for the Promotion of Science (JSPS) "INSPIRING SCIENCE." See 25870132 (grant number). The

fundors had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

AUTHORS' CONTRIBUTIONS

YO, IA, KS, TT, NK, and TU performed data collection. DY and YO analyzed the data. DY, YO, and MI had a role in writing the manuscript. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Participants filled out a questionnaire with their consent. This study was approved by the Ethical Committee, Graduate School of Medicine, Chiba University (No. 1709).

CONSENT FOR PUBLICATION

Not applicable.

DATA AVAILABILITY STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

ORCID

Daiki Yokokawa  <https://orcid.org/0000-0003-0944-8664>

Kiyoshi Shikino  <https://orcid.org/0000-0002-3721-3443>

REFERENCES

1. Eguchi N, Numata N. International comparison of medical care awareness: the case of four regional cities. Japanese Medical Association Research Institute Working Paper. 2004;105(2).
2. Matsushima D, Okayama M, Matsushima E, Fujiwara S, Komatsu K, Kajii E. Percentage and characteristics of residents without a primary care physician. *J Health Welfare Stats.* 2009;56(11):22–5.
3. Shima M, Nitta Y, Iwasaki A. Research regarding patient behavior at outpatient clinics in large hospitals. *Jpn J Public Health.* 1990;54(9):648–52.
4. National Federation of Health Insurance Societies. National Survey of Citizen Awareness of Medical Care. Tokyo: National Federation of Health Insurance Societies; 2007.
5. Ministry of Health, Labor and Welfare. Primary care physician systems around the world. 2007. https://www.mhlw.go.jp/shingai/2007/06/dl/s0621-6c_0006.pdf. Accessed September 2, 2019.
6. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Q.* 2005;83(3):457–502.
7. Chiba City, Health and Welfare Bureau, Health Planning and Management Division. Let's engage with a primary care physician and primary care dentist. 2012. <https://www.city.chiba.jp/hokenfukushi/kenkou/kikaku/kakarituke.html>. Accessed September 2, 2019.
8. Japan Medical Association. Let's engage with a primary care physician. <https://www.med.or.jp/people/kakari/>. Accessed September 2, 2019.
9. Takada T, Ikusaka M, Ohira Y, *et al* An investigation into the efficacy of implementing a primary care physician system in University Hospital Outpatient Clinics. 2011. <https://mhlw-grants.niph.go.jp/project/19193/1>. Accessed August 10, 2021.
10. Nomura H, Nakayama T. The Japanese healthcare system. *BMJ.* 2005;331(7518):648–9. <https://doi.org/10.1136/bmj.331.7518.648>
11. Ministry of Health, Labor and Welfare. Minister's Secretariat, Statistical Information Vital, Health and Social Statistics Office. Statistical data introduction: 2002 patients' behavior survey summary. *J Health Welfare Stats.* 2004;51(4):46–53.

12. Ministry of Health, Labor and Welfare. Promotion of healthcare which ensures the safety of citizens throughout their lives. Ministry of Health. Labor and Welfare White Paper. 2007;19:114-9.
13. Smith RC, Lyles JS, Gardiner JC, *et al* Primary care clinicians treat patients with medically unexplained symptoms: a randomized controlled trial. *J Gen Intern Med.* 2006;21(7):671-7.
14. Fukuhara S, Bito S, Green J, Hsiao A, Kurokawa K. Translation, adaptation, and validation of the SF-36 Health Survey for Use in Japan. *J Clin Epidemiol.* 1998;51(11):1037-44.
15. Fukuhara S, Ware JE, Kosinski M, Wada S, Gandek B. Psychometric and clinical tests of validity of the Japanese SF-36 Health Survey. *J Clin Epidemiol.* 1998;51(11):1045-53.
16. Fukuhara S. Manual of SF-36v2 Japanese Version. Kyoto, Japan: Institute for Health Outcomes & Process Evaluation Research; 2004.
17. Richardson J, Chan D, Risdon K, Giles C, Mulveney S, Cripps D. Does monitoring change in function in community-dwelling older adults alter outcome? A randomized controlled trial. *Clin Rehabil.* 2008;22(12):1061-70.
18. Kwan ML, Tam EK, Ergas IJ, *et al* Patient-physician interaction and quality of life in recently diagnosed breast cancer patients. *Breast Cancer Res Treat.* 2013;139(2):581-95.
19. Maly RC, Liu Y, Liang L-J, Ganz PA. Quality of life over 5 years after a breast cancer diagnosis among low-income women: effects of race/ethnicity and patient-physician communication. *Cancer.* 2015;121(6):916-26.
20. Wong ST, Korenbrot CC, Stewart AL. Consumer assessment of the quality of interpersonal processes of prenatal care among ethnically diverse low-income women: development of a new measure. *Womens Health Issues.* 2004;14(4):118-29.
21. Burton C. Beyond somatisation: a review of the understanding and treatment of medically unexplained physical symptoms (MUPS). *Br J Gen Pract.* 2003;53(488):231-9.
22. Ye T, Sun X, Tang W, *et al* Effect of continuity of care on health-related quality of life in adult patients with hypertension: a cohort study in China. *BMC Health Serv Res.* 2016;16(1):1-8.
23. Wyrwich KW, Tierney WM, Babu AN, *et al* A comparison of clinically important differences in health-related quality of life for patients with chronic lung disease, asthma, or heart disease. *Health Serv Res.* 2005;40(2):577-91.
24. Ogura K, Yakoub MA, Christ AB, *et al* What are the minimum clinically important differences in SF-36 scores in patients with orthopaedic oncologic conditions? *Clin Orthop Relat Res.* 2020;478(9):2148-58.
25. Badhiwala JH, Witiw CD, Nassiri F, *et al* Minimum clinically important difference in SF-36 scores for use in degenerative cervical myelopathy. *Spine.* 2018;43(21):E1260-6.
26. Wee HL, Li SC, Cheung YB, *et al* The influence of ethnicity on health-related quality of life in diabetes mellitus: a population-based, multiethnic study. *J Diabetes Complications.* 2006;20(3):170-8.

How to cite this article: Yokokawa D, Ohira Y, Ikegami A, Shikino K, Tsukamoto T, Noda K, *et al*. Relationship between the presence of primary care physicians and health-related quality of life. *J Gen Fam Med.* 2022;23:87-93. <https://doi.org/10.1002/jgf2.490>