Quality in Primary Care 2013;21:51–60

International exchange

Physician cardiovascular disease risk factor management: practice analysis in Japan versus the USA

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ABSTRACT

Background There is a 42% lower cardiovascular disease (CVD) death rate in Japan compared with the USA. Do physicians report differences in practice management of CVD risk factors in the two countries that might contribute to this difference?
Aims CVD risk factor management reported by Japanese versus US primary care physicians was studied.
Methods We undertook a descriptive study. An internet-based survey was conducted with physicians from each country. A convenience sample from the Shiga Prefecture in Japan and the state of Ohio in the USA resulted in 48 Japanese and 53 US physicians completing the survey.
Results The survey group may not be representative of a larger sample. The survey demonstrated that 98% of responding Japanese physicians spend <10 minutes performing a patient visit, while 76% of US physicians spend 10 to 20 minutes ($P < 0.0001$) managing CVD risk factors. Eighty-seven percent of Japanese physicians (vs. 32% of US physicians) see patients in within three months for follow-up ($P < 0.0001$). Sixty-one percent of Japanese physicians allocate < 30% of visit time to patient education, whereas 60% of US physicians spend > 30% of visit time on patient education ($P < 0.0001$). Prescriptions are renewed very frequently by Japanese physicians (83% renewing less than monthly) compared with 75% of US physicians who renew medications every one to six months ($P < 0.0001$). Only 20% of Japanese physicians use practice guidelines routinely compared with 50% of US physicians ($P = 0.0413$). US physicians report disparities in care more frequently ($P < 0.0001$). Forty-three percent

of Japanese (vs. 10% of US) physicians believe that they have relative freedom to practise medicine ($P < 0.0001$).

Conclusion Many factors undoubtedly affect CVD in different countries. The dominant ones include social determinants of health, genetics, public health and overall culture (which in turn determine diet, exercise and other factors). Yet the medical care system is an expensive component of society and its role in managing CVD risk factors deserves study. This descriptive report poses questions that require a more definitive study either with a more representative sample or direct observation of physician practices. US physicians responding to the survey reported greater administrative efforts, frustration and disparities in their practice, yet they followed practice guidelines more carefully. Japanese physicians responding reported focusing on quick, frequent visits that may have been more medication oriented, expecting more patient responsibility in self-care, which may have resulted in better chronic disease management. There may be differences in CVD risk factor management by primary care physicians in Japan versus the USA.

Keywords: cardiovascular risk factors, global health, guidelines, health systems, practice management

How this fits with quality in primary care

What do we know?

Cardiovascular disease (CVD) death rates in Japan are 42% lower than in the USA. Both nations provide modern health care, although the USA spends more than twice the dollars per capita than does Japan. The World Health Organization (WHO) has ranked the Japanese healthcare system as 10th best in the world, while ranking the US system 37th. Primary care physicians manage CVD risk factors in the ambulatory setting in both countries. Multiple risk factors influence CVD risk factors, including social determinants of health, culture and genetics.

What does this paper add?

Japanese physicians see their patients much more frequently for a much shorter visit time than US physicians and feel less bound to follow practice guidelines. In spite of a government-run healthcare single-payer system, these Japanese physicians perceive less interference by government than do US physicians responding to the survey. Disparities may affect US physicians' practices in CVD management. Physicians in this survey believe that Japanese patients accept greater responsibility for their care than US patients.

Introduction

Physician management of cardiovascular disease (CVD) risk factors in the office or clinic setting is not well understood. Although various CVD risk factor guidelines have been promulgated (e.g. ATP III, JNC VII), their dissemination and implementation have not been especially successful or well-studied.

CVD death rates are dramatically lower in Japan than they are in the USA. The World Health Organization (WHO) reports the age-standardised CVD mortality rate for men and women is 179 per 100 000 in the USA versus 103 in Japan.[1] Therefore, Japan has a 42% lower CVD death rate than the USA. The non-age-standardised prevalence of hypertension in Japan is reported to be 47%, whereas in the USA it is 28.7%.[2,3] Hypercholesterolaemia has been reported as lower in Japan than the USA.[4–6] The prevalence of diabetes in Japan is 6.9%, whereas in the USA it is 10.7%.[7,8] Smoking in Japan has a prevalence of 51% in men and 10% in women compared with the USA where 23% of men and 20% of women smoke.[9,10] In 2000, the WHO released its most recent evaluation of health systems internationally.[11] While the USA was ranked 37th among the health systems in this controversial report, Japan was ranked 10th.[12]

The Japanese healthcare system is relatively inexpensive in comparison with other high-income countries. In 2003, healthcare spending in the USA was $5635 per capita, while in Japan it was $2139 per capita. The USA committed 15% of gross domestic product (GDP) to health care, while Japan spent 7.9%.[13] Japan has universal health care, with an 'employer mandate' for those working and government subsidies for those not working. It is a high volume, high technology, low-cost health system. Physicians are generally in private practice, although some are hospital employees; they are highly respected members of the Japanese society.[14] The system works through a series of private, not-for-profit insurance companies.

Between 2005 and 2006, the National Heart Lung and Blood Institute (NHLBI) created 12 enhanced dissemination utilisation centres, recognising the need to disseminate and implement research discoveries by 'taking the findings of clinical investigations and translating them into the practice of medicine at the community level'.[15] The principal investigator of this study was one of the centre directors established by NHLBI. Members of this team have previously studied how microsystem changes in physician offices improve the use of practice guidelines.[16,17] This group has compared management of CVD risk factors in US and French physicians in the microsystem of the office.[18] We are now extending this study to compare US and Japanese physicians' practice behaviours and attitudes in managing CVD risk factors.

There is little doubt that much of the difference in CVD death rates can be attributed to substantial differences between the two countries in the culture of eating, exercise and other social determinants of health. The two populations are genetically different as well as the health system, with one providing universal care to the population and the other not. Yet, the question arises if there are differences in how physicians manage CVD risk factors. Even if differences are found, demonstrating a cause–effect relationship is challenging and beyond the scope of this study.

The goal of this study was to seek to identify differences in physician outpatient management of patients with CVD risk factors. Might some of those differences highlight some of the differences between the US and Japanese healthcare systems? Could those systems differences explain part of the differences in CVD death rates? Finally, does the availability of universal access to care in Japan, with less administrative complexity than the USA, allow physicians and patients to adopt professional and culturally pertinent approaches to the management of cardiovascular risk factors that could possibly improve outcomes of care. We conducted an internet-based survey of physicians in both countries. Our expectation was not to answer these complex questions, but rather to raise them, identify some possible differences and promote a more definitive future study to attempt to seek more complete information.

Methods

Survey design

Preliminary information was collected by local interviews and an on-site study of physician practices. Then an internet-based survey was conducted. Nearly all US physicians were primary care physicians (primarily family physicians), while the Japanese physicians were in a variety of specialties; the addition of other specialties reduces the ability of the authors to reach accurate conclusions.

Japanese physicians were surveyed through the Shiga Prefecture Medical Society, the equivalent to a county medical society in the USA. Shiga Prefecture in south central Japan is fairly representative of the country, with many demographic characteristics being in the middle third of all Japanese Prefectures (including population density and prevalence of hypertension, diabetes and smoking in men).[19]

Most US physicians surveyed were members of the Ohio Academy of Family Practice, although primary care physicians in other US states were also included. Ohio is in the eastern-central part of the USA. It is generally considered representative of the USA; its overall health ranking is 36 of 50, placing it in the middle third of US states.[20]

This study used a small convenience sample of participants and cannot be claimed to be a representative sample of all physicians either in the USA or Japan. A brief multiple choice survey (44 questions) was made available through the internet. The data was collected on Survey Monkey. The survey was written in English and translated into Japanese. Physicians were not paid any fees for completing the survey.

Forty-one questions were multiple choice, three were free-text. The physicians were contacted by mail and no follow-up communication occurred. There were four sections to the survey, emphasising the following themes: physician demographics, practice characteristics, management of CVD risk factors and health policy.

The survey asked each physician about their practice behaviours, for example, how often they typically saw a patient with hypertension and hyperlipidaemia for on-going management (e.g. every two weeks, every six months) and how much time they typically spent with a patient with one of these problems (e.g. 2, 10, 15 minutes).

Physicians were asked if they used electronic medical records and what percentage of their patients were successfully treated to national or regional guidelines for hypertension and hyperlipidaemia. The survey asked what factors influenced their selection of medication in treating patients with risk factors for CVD and what their primary focus was while caring for these patients (lifestyle modification, medication or both), if they had a reminder system for on-going care, if they routinely provided patient education (and what percentage of visit time they estimate they spent on patient education), if they provided patient education materials, if they had easily accessible information on current guidelines, if they routinely followed guidelines, and if they had peer review of their outcomes, either internally from a colleague or externally from the government or insurance company. The survey

asked if race, cultural issues or lack of health insurance affected the care of their patients, and if they were influenced by the government or insurance companies in making medical decisions. They were asked if their personal income or the revenue brought to their practice group was influenced by their clinical outcomes in CVD risk management and if so how much it affected their income (e.g. 20, 40, 60 and 80%). This study was approved by the Institutional Review Board of both Wright State University and the University of Georgia. Participants provided informed consent by participating in the study.

Statistical analysis

Data were collated and responses of the Japanese physicians were compared to the US physicians (system to system) in parallel to CVD death rates using SAS version 9.1 for analysis. Nominal data were analysed using the chi-squared[2] or Fisher's exact test, as appropriate. Wilcoxon's test was used to test the differences of physician visit time between these two countries. Ordinal data were analysed using the Cochran–Armitage test for trend to seek differences in physician practices between the nations. A P-value of < 0.05 was considered statistically significant for all statistical tests.

Results

Physician demographics

Forty-eight Japanese physicians and 53 US physicians completed the survey. This was a convenience sample. The responses came from a small and non-representative sample of physicians in each country. However, the number responding in each group was similar and statistical significance was sought between the two groups of physicians. Japanese physicians were older and many were not primary care physicians. In the USA, primary care physicians were more fully represented (Table 1).

Practice management behaviours

There were significant differences between the Japanese and US physicians who participated in the survey in practice management of CVD risk factors (Table 2). Patient visits are different in terms of both patient volume and visit time. Two thirds (66%) of the Japanese physicians in the study saw more than 125 patients per week. This is many more than the US physicians, 74% of whom said they saw between 25 and 125 patients per week ($P < 0.0001$). When asked how long the typical office visit lasts, 98% of Japanese physicians claimed <10 minutes, while 76% the US physicians claimed to spend 10–20 minutes per visit. Only 23% of the US doctors reported spending <10 minutes with a patient, and only 2.1% of Japanese physicians claimed to spend >10 minutes ($P < 0.0001$) (Figure 1).

Table 1 Physician demographics

Variable	Japan % (n)	USA % (n)	P
Physician age (years)			
<35	0.00 (0)	13.21 (7)	0.0056
35–44	8.51 (4)	26.42 (14)	
45–54	36.17 (17)	24.53 (13)	
55–64	31.91 (15)	20.75 (11)	
>64	23.40 (11)	15.09 (8)	
Physician specialty			
Family/general practice and internal medicine	68.09 (32)	100 (53)	<0.0001
Other*	31.91 (15)	0 (0)	
Family/general practice	40.43 (19)	100 (53)	<0.0001
Internal medicine	27.66 (13)	0 (0)	
Other*	31.91 (15)	0 (0)	

* Cardiology, endocrinology, etc.

Table 2 Practice management behaviour

Patient management	Japan % (*n*)	USA % (*n*)	*P*
Patient visits per week			
<25	2.13 (1)	5.66 (3)	<0.0001
25–125	31.91 (15)	73.58 (39)	
>125 patients	65.96 (31)	20.75 (11)	
Physician visit time (minutes)			
<10	97.87 (46)	22.64 (12)	<0.0001
10–20	2.13(1)	75.47 (40)	
>20	0 (0)	1.89 (1)	
Follow-up time (months)			
<3	87.14 (122)	32.48 (51)	
>3	12.86 (18)	67.52 (106)	<0.0001
Time spent on patient education			
>30% of visit	39.13 (18)	59.62 (31)	
<30% of visit	60.87 (28)	40.38 (21)	0.0430
Prescription follow-up time (months)			
<1	82.98 (78)	16.98 (18)	
1–6	17.02 (16)	74.53 (79)	<0.0001
>6	0 (0)	8.49 (9)	
Guideline use (% of patients)			
<20%	23.91 (11)	14.00 (7)	
20–40%	19.57 (9)	10.00 (5)	0.0413
41–60%	17.39 (8)	12.00 (6)	
61–80%	19.57 (9)	14.00 (7)	
>80%	19.57 (9)	50.00 (25)	
Following guidelines			
Generally or not	57.45 (27)	31.37 (16)	
strictly or carefully	42.55 (20)	68.63 (35)	0.0090

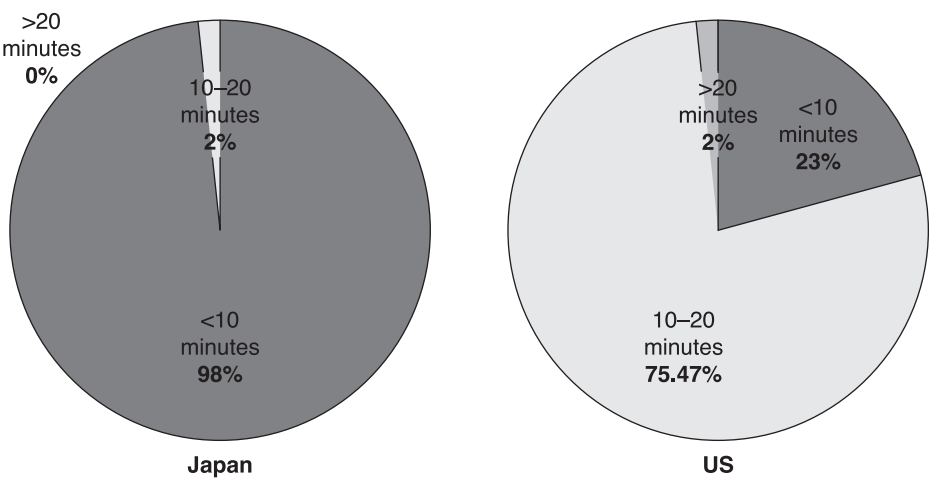

Figure 1 Patient Visit Time ($P < 0.0001$)

The differences in follow-up time for appointments between these two countries were significant. The vast majority of Japanese physicians (87%) preferred to follow-up after <3 months, while only 32% of the US physicians did so. By contrast, 68% of the US physicians chose to follow-up after >3 months, whereas only 13% Japanese physicians did ($P < 0.0001$). Most Japanese physicians (61%) reported spending <30% of the time educating patients, while the majority of US physicians (60%) contended that they spent >30% of the visit on patient education ($P = 0.043$). Differences in prescription renewal frequency between the two countries were significant. Most of the Japanese physicians (83%) prescribed medicine for <1 month, whereas 75% of the US physicians prescribed for 1–6 months ($P < 0.0001$).

The attitude toward CVD guidelines usage was different between the two groups. The US physicians were more likely to use guidelines ($P = 0.0413$). Fifty percent of them reported using guidelines frequently (>80% of their patients) with CVD risk factors, whereas only 20% of Japanese physicians reported use of guidelines in >80% of their patients. Although both groups used guidelines, their attitudes toward general and strict usage varied ($P = 0.009$). Most (69%) US physicians said they followed the guidelines carefully or strictly, while only ~ 43% of the Japanese physicians said the same. Most Japanese physicians (57%) said they used the guidelines more generally or not at all, compared with 31% of the US physicians. When selecting medications, Japanese physicians thought guidelines (38%), personal experience (26%) and journals/textbooks (21%) were the most important factors, while US physicians tended to think price (45%), guidelines (39%) and personal experience (13%) were the most important factors ($P < 0.0001$).

National social factors impact questions

Financial rewards for performance at any level were reported by 36% of US physicians and only 15% of Japanese physicians ($P = 0.0004$) (Table 3). Almost all of the Japanese physicians (96%) reported that > 80% of their patients were covered by private or public insurance, while only 23% of the US physicians made the same assessment ($P < 0.0001$).

Over half (53%) of the US physicians thought social factors such as racial, economic and cultural issues affected patient care, whereas 21% of Japanese physicians thought so. Sixty percent of Japanese physicians thought that health care was generally the same to all patients in their own practice, whereas only 17% of US physicians reached the same conclusions ($P < 0.0001$). Generally, physicians' opinions about whether they could practise freely were quite different in these two groups ($P < 0.0001$). Just under half of the Japanese physicians (43%) thought they could practise freely, whereas only 9.6% of the US physicians felt that they could practise without interference from the government or insurance companies. As many as 81% of US physicians thought they could not make decisions freely, whereas 34% of Japanese physicians similarly felt they were not free to make clinical decisions.

Nearly half of Japanese physicians (47%) versus 9.6% of US physicians reported that >40% of their patients had blood pressure cuffs at home and took blood pressure recordings frequently themselves ($P = 0.0001$) (Figure 2). More Japanese patients reportedly knew their blood pressure and cholesterol levels. Most (70%) Japanese physicians reported that >40% of their patients knew their levels, while only 34% of US physicians reported the same ($P = 0.0002$) (Figure 3). As many as 75% of the US physicians believed their patients did not follow good lifestyle practices, while 36% of Japanese physicians felt the same ($P < 0.0001$) (Figure 4).

Discussion

The limited sample size and recognition of this being a convenience sample means conclusions are tentative. More definitive data are needed by either using a much larger sample or by direct observation of physicians in the management of CVD risk factors.

Practice management behaviours

Japanese physicians appeared to have higher work volumes. Those responding to the survey saw more patients in a week and spent less time on each visit. During the limited patient visit time, the Japanese physicians spent less time educating patients but they tended to follow-up in a shorter period and prescribe more medication to patients. Virtually all medical care is paid the same nationally to all providers as a uniform fee schedule on a fee-for-service basis in Japan.[21] As physicians make relatively less revenue per visit than US physicians, there may be economic forces promoting short and frequent visits.[15] Japanese patients see their physician more frequently than do US patients. For CVD risk factor management, more intensive care leads to better outcomes.[22] Do more frequent, short visits lead to better outcomes in CVD risk factor management? A more comprehensive study is needed to address that question. The Japanese physicians surveyed report less interest in guidelines relying on their own experiences in patient care.[23]

Table 3 National policy impact

	Japan % (*n*)	USA % (*n*)	*P*
Financial rewards			
No additional income	84.78 (39)	64.15 (34)	0.0004
<20% of my patients	4.35 (2)	32.08 (17)	
20–40% of my patients	2.17 (1)	1.89 (1)	
41–60% of my patients	6.52 (3)	0.00 (0)	
61–80% of my patients	2.17 (1)	1.89 (1)	
Patient with insurance			
<20% of the time	2.13 (1)	11.54 (6)	<0.0001
20–40% of the time	0 (0)	17.31 (9)	
41–60% of the time	0 (0)	25.00 (13)	
61–80% of the time	2.13 (1)	23.08 (12)	
>80% of the time	95.74 (45)	23.08 (12)	
Health disparities – in country			
Never or rarely	40.43 (19)	3.77 (2)	<0.0001
Occasionally	31.91 (15)	22.64 (12)	
Frequently or always	27.66 (13)	73.58 (39)	
Health disparities – in office/clinic			
Disagree	59.57 (28)	17.31 (9)	<0.0001
Neutral	21.28 (10)	21.15 (11)	
Agree	19.15 (9)	61.53 (32)	
System encouragement			
Not very often or less	55.32 (26)	31.37 (16)	0.0170
Frequently or more	44.68 (21)	68.63 (35)	
Physicians practising freely			
Disagree	34.04 (16)	80.77 (42)	<0.0001
Neutral	23.04 (11)	9.62 (5)	
Agree	42.55 (20)	9.62 (5)	
Racial-economic-cultural issues affecting physicians practising			
Never or rarely	38.30 (18)	19.23 (10)	0.0060
Occasionally	40.43 (19)	28.85 (15)	
Frequently or always	21.28 (10)	51.92 (27)	
% patients involved in risk factor management			
<10	6.38 (3)	3.77 (2)	0.4175
10–20	21.28 (10)	35.85 (19)	
21–30	27.66 (13)	22.64 (12)	
31–40	19.15 (9)	22.64 (12)	
>40	25.53 (12)	15.09 (8)	
% patients with blood pressure cuffs at home			
<10	4.26 (2)	11.54 (6)	0.0001
10–20	8.51 (4)	32.69 (17)	
21–30	25.53 (12)	28.85 (15)	
31–40	14.89 (7)	17.31 (9)	
>40	46.81 (22)	9.62 (5)	

Table 3 Continued

% patients knowing their numbers			
<10	0 (0)	5.66 (3)	0.0002
10–20	6.38 (3)	20.75 (11)	
21–30	2.13 (1)	22.64 (12)	
31–40	21.28 (10)	16.98 (9)	
>40	70.21 (33)	33.96 (18)	
Patients following good lifestyle			
Disagree	36.17 (17)	75.47 (40)	<0.0001
Neutral	46.81 (22)	20.75 (11)	
Agree	17.02 (8)	3.77 (2)	

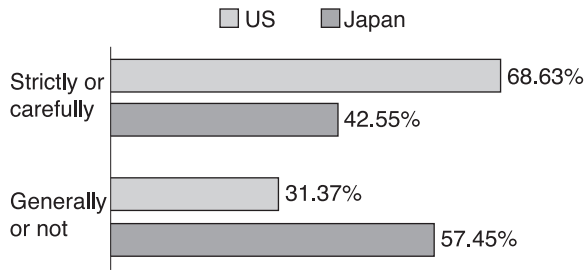

Figure 2 Patient's involvement

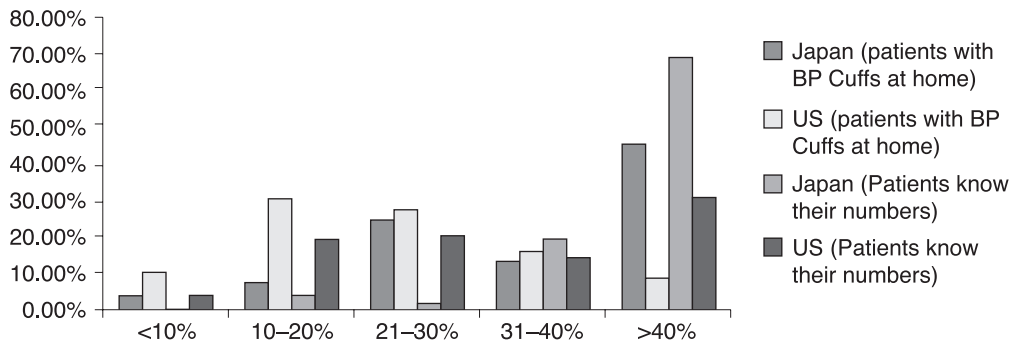

Figure 3 Patient's involvement (BP cuff at home *P* - 0.0001 know their numbers *P* - 0.0002)

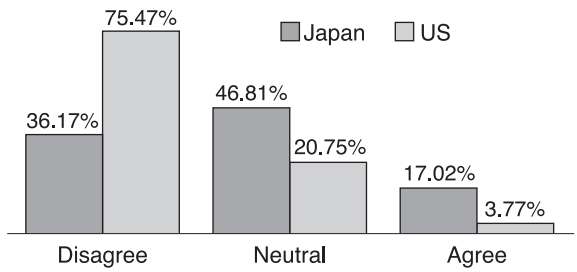

Figure 4 Patients follow good lifestyle ($P < 0.0001$)

National social factors impact questions

Japanese physicians in this survey believed they practised more freely than US physicians. They did not need to worry about insurance for most of their patients, and were less influenced by social factors like racial, economic and cultural issues. In Japan, the universal health insurance system was established in 1961.[24] Japanese citizens are covered comprehensively and exclusively by national medical insurance and social insurance. Patients cannot pay privately for the care they receive. Patients have guaranteed access to any health providers without additional fees. Finally, the providers are reimbursed by the government though a fee-for-service process.[24]

The physicians responding to the survey in both countries agreed that their patients were not too involved in managing their own risk factors, but Japanese patients appeared to be more involved in their care management as perceived by their physicians: more Japanese patients reportedly have blood pressure cuffs at home; more Japanese patients were reported to know about their levels of blood pressure and cholesterol; more Japanese patients were reported to follow 'good' lifestyles.

In Japan, health care is not only an individual issue but also a matter for the whole family. Japanese patients rely more on family and physician authority and place less emphasis on patient individualities. Therefore, patients might be more compliant to physician directives. In Japan, nearly 62% of elders live with their children and it is culturally believed that children should provide care for their elders at home. Therefore, when a patient is found to have hypertension, either the patient or their family may purchase a blood pressure cuff and take the blood pressure regularly.[25]

Limitations

Any conclusions reached by this study must be validated either by a larger study, a more representative sample, or direct observation of physician practices. The authors recognise that this study, using a convenience sample, provides observational evidence only. The nature of the survey cannot result in comprehensive conclusions demonstrating cause-effect relationships. There were only 47 Japanese physicians and 53 US physicians in our study and it is possible that these small numbers may not be representative in either country. In addition, the groups of physicians in the two countries were of different ages and specialties. Recall versus direct measurement of practices always has limitations in accuracy. Results are based on a physicians' survey not observation of their practices. Finally, cultural differences could influence survey responses.

Conclusions

Physician practice behaviours and the factors affecting practising in Japan and the USA were compared focusing on CVD risk factor management, and attempting to seek evidence from the health system perspective for why CVD death rates are so much lower in Japan than the USA. The primary reasons are most likely unrelated to the medical care system and instead are likely to be a function of diet, public health, culture and the social determinants of health. Yet, there were clear differences in the physicians' responses to the survey questions in how they reported managing CVD risk factors. The Japanese physicians reported seeing patients more frequently but for shorter visits. This could be a better process for chronic disease management. Japanese physicians reported practising more freely, with fewer factors affecting practice including social, systemic and financial issues. With a 'single-payer' system of care, Japanese physicians perceived less interference by insurance companies or the government than did US physicians. The freedom to practice by these Japanese physicians may contribute to less use of practice guidelines. Japanese patients may be more involved more in care management and more actively follow physicians' advice.

ACKNOWLEDGEMENTS

The authors would like to thank Natalie Arford and Colleen O'Brien for their support in the manuscript preparation. Dr Claude Lenfant, has played a critical role in focusing the hypothesis and establishing the binational contacts. The Shiga Prefecture Medical Society and Dr Sadahiro Asano, the former president, provided the contacts with local physicians in Japan.

REFERENCES

1 WHO Global Infobase. *Mortalities*. www.who.inf/healthinfo/bod/en/index.html (accessed 12 October 2010).
2 Ueshima H, Zhang X-H and Choudhury SR. Epidemiology of hypertension in China and Japan. *Journal of Human Hypertension* 2000;14:765–9.
3 Haajar I and Kotchen T. Trends in prevalence, awareness, treatment, and control of hypertension in the United States, 1988–2000. *JAMA* 2003;290:199–206.
4 Ueshima H, Sekikawa A, *et al.* Cardiovascular disease and risk factors in Asia: a selected review. *Circulation* 2008;118:2702–9.

5 Sekikawa A, Ueshima H, *et al.* Less sublinical atherosclerosis in Japanese men in Japan than in white men in the United States in the post-World War II birth cohort. *American Journal of Epidemiology* 2007;165:617–24.
6 Ford ES, Mokdad AH, Giles WH *et al.* Serum total cholesterol concentrations and awareness, treatment and control of hypercholesterolemia among UG adults: findings from the National Health & Nutrition Examination Survey, 1990 to 2000. *Circulation* 2003;107: 2185–9.
7 King H, Aubert R and Herman W. Global burden of diabetes, 1995–2025. *Diabetes Care* 1998;21:114–1431.
8 National Diabetes Statistics, 2007, NIDDK. duabetes, buddj,bug,giv./dn/PUBS/statistics/#allages (accessed 11 April 2009).
9 WHO Western Pacific Region fact sheets. *Smoking Statistics.* www.wpro.who.int/media_centre/fact_sheets/fs_20020528.htm (accessed 12 November 2010).
10 CDC. Cigarette smoking among adults – United States, 2004. *Morbidity and Mortality Weekly Report* 2005; 54(44):1121–4.
11 World Health Organization. *The World Health Report 2000: health systems: improving performance.* Geneva: World Health Organization.
12 World Health Organization. *The World Health Report 2000: health systems: improving performance*, Annex, Table I. Geneva: World Health Organization.
13 Frogner B and Anderson FG. *Multinational Comparisons of Health Systems Data.* Commonwealth Fund, April 2006.
14 Reid TR. *The Healing of America: a global quest for better, cheaper, and fairer health care.* New York: Penguin Press, 2009.
15 Lenfant C. Shattuck lecture: clinical research to clinical practice – lost in translation. *New England Journal of Medicine* 2003;349:868–74.
16 Schuster RJ, Terwoord N and Tasosa J. Changing physician practice behavior to measure and improve clinical outcomes. *American Journal of Medical Quality* 2006; 21:394–400.
17 Schuster RJ, Terwoord N and Tasosa J. Translational research – implementation of NHLBI obesity guidelines in a primary care community setting: the Physician Obesity Awareness Project. *Journal of Nutrition, Health and Aging* 2008;12(10):704S.
18 Schuster RJ, Steichen O, *et al.* Physician cardiovascular disease risk factor management: practices in France vs the United States. *Journal of Clinical Hypertension* 2011; 13:10–18.
19 www.Stats-Japan.com/t/tdfk/shiga (accessed 27 November 2012).
20 www.americashealthrankings.org/mediacenter/mediacenter2.aspx (accessed 27 November 2012).
21 Ikegami N. Japanese health care: low cost through regulated fees. *Health Affairs* (*Millwood)* 1991;10(3): 87–109.
22 Steinberg G, Bhatt D, Mchta S *et al.* Nine-year trends in achievement of risk factor goals in the US and European outpatients with cardiovascular disease. *American Heart Journal* 2008;156:719–27.
23 Sekimoto M, *et al.* Why are physicians not persuaded by scientific evidence? A grounded theory interview study. *BMC Health Service Research* 2006;6:92.
24 Abe MA. Japan's clinic physicians and their behavior. *Social Science & Medicine* 1985;20(4):335–40.
25 Ruhnke GW, *et al.* Ethical decision making and patient autonomy: a comparison of physicians and patients in Japan and the United States. *Chest* 2000;118(4):1172–82.

FUNDING

None.

ETHICS

This project was approved by the Institutional Review Board of both Wright State University and the University of Georgia.

PEER REVIEW

Not commissioned; externally peer reviewed.

CONFLICTS OF INTEREST

Dr Schuster has received funding from Pfizer for other project efforts. There was no outside financial support for conducting this study. This paper has not been submitted elsewhere for publication; duplicate publication has been avoided.

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Received 15 September 2012
Accepted 12 December 2012