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Cross-Sectional Study

A Comparison of Chronic Pain Prevalence in Japan, Thailand, and Myanmar

Toshihiko Sakakibara, MD[1], Zhuo Wang, MD[1], Permsak Paholpak, MD[2], Weerachai Kosuwon, MD[2], Myint Oo, MD[3], and Yuichi Kasai, MD[1]

From: [1]Department of Spinal Surgery and Medical Engineering, Mie University Graduate School of Medicine, Japan; [2]Department of Orthopaedics, Faculty of Medicine, Khon Kaen University, Thailand; and [3]Department of Orthopaedic Surgery, Nay Pyi Taw General Hospital, Myanmar

Address Correspondence:
Yuichi Kasai, MD
Department of Spinal Surgery and Medical Engineering
Mie University Graduate School of Medicine
2-174 Edobashi, Tsu-shi, Mie, 514-8507, Japan
E-mail: ykasai@clin.medic.mie-u.ac.jp

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Background: Pain has been regarded as important in the improvement of quality of life (QOL). In the advanced countries of Europe and the North America, a number of large-scale epidemiological surveys on pain, particularly chronic pain, have thus been performed in general populations. However, few epidemiological surveys of chronic pain have been reported from developing countries, and no surveys appear to have examined chronic pain in the least developed countries.

Objectives: To compare the incidence of chronic pain in Asian countries, using Japan as an advanced country, Thailand as a developing country, and Myanmar as one of the least developed countries.

Study Design: Cross-sectional study in 4 hospitals.

Setting: A university hospital and a general hospital in Japan, a university hospital in Thailand, and a general hospital in Myanmar.

Methods: Patients were 1,000 nursing staff working in Japan, 448 nursing staff working in Thailand, and 405 nursing staff working in Myanmar. The survey was performed by requesting all nursing staff to anonymously answer the questionnaire. Data were used to calculate chronic pain prevalence, pain site, presence or absence of consultation with doctors, methods of handling pain other than consultation with doctors, and whether pain was controlled for each country. The results were then compared between countries.

Results: The prevalence of chronic pain in Myanmar was 5.9%, which was significantly lower ($P < 0.01$) than in Japan (17.5%) or Thailand (19.9%). The most frequent pain sites were the lower back, head, and shoulders in Japan, and the shoulders, ankle, upper back, and head in Thailand, whereas in Myanmar, no clear certain tendencies were observed. The most frequent method for handling pain other than consultation with doctors was over-the-counter drugs in Japan, massage in Thailand, and relaxation therapy (meditation) in Myanmar.

Limitations: Limitations of this study were the cross-sectional design study, the small number of hospitals included, the limitation of patients to nursing staff, and the omission from the questionnaire of questions regarding body height and weight, working situation, family background, trauma history, sports activity history, smoking history, psychological/character tests, QOL, and pain levels of patients.

Conclusion: The prevalence of chronic pain was significantly lower in Myanmar than in Japan or Thailand. With regard to the site and treatment of chronic pain, no clear tendencies were observed between countries, suggesting that frequency and the character of chronic pain differ from county to country around the world.

Key words: Chronic pain, epidemiology, prevalence, low back pain, shoulder pain, ankle pain, headache, developing countries, least developed countries

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In recent years, pain has been regarded as important in the improvement of quality of life (QOL) (1). Therefore, in the advanced countries of Europe and the North America, a number of large-scale epidemiological surveys (2-8) on pain, particularly chronic pain such as low back pain and stiff shoulders, have thus been performed in general populations, and the prevalence of chronic pain is reportedly 30.7% in the United States (5) and 19.0% in Europe (6). Few reports have investigated the prevalence of chronic pain in developing countries. Zarei et al (9) reported a prevalence of 38.9% in Iran, while Sá et al (10) reported a rate of 41.7% in Brazil. Tsang et al (11) investigated the prevalence of chronic pain in 10 advanced countries and 7 developing countries, finding means of 38.9% in advanced countries and 37.7% in developing countries, with no significant difference between either type, and stated that there was no obvious association between prevalence of chronic pain and economic situation.

The United Nations classifies all countries in the world into the 3 broad groups of advanced countries, developing countries, and least developed countries (12). As mentioned above, few epidemiological surveys of chronic pain have been reported from developing countries, and no surveys appear to have examined chronic pain in the least developed countries. The present study aimed to compare the incidence of chronic pain in Asian countries, using Japan as an advanced country, Thailand as a developing country, and Myanmar as one of the least developed countries. The same questionnaire survey on pain was performed using nursing staff alone as patients in all 3 countries and prevalences, sites, and treatment of chronic pain were compared.

Methods

Recipients of the questionnaire were all the nursing staff working at a general hospital and a university hospital in Mie prefecture in Japan, all the nursing staff working at a university hospital in Khon Kaen City in Thailand, and all the nursing staff working at a general hospital in Nay Pyi Taw City in Myanmar. All 4 survey hospitals are core general hospitals for the community with a full complement of clinical departments. The number of hospital beds was 685 and 655 in the 2 hospitals in Japan, respectively, 800 in the hospital in Thailand, and 1,000 in the hospital in Myanmar.

The questionnaire survey (Table 1) was created by the authors after consulting the survey used by Breivik

Table 1. *Questionnaire.*

Q1.	How old are you?				
Q2.	Are you male or female?				
Q3.	Have you experienced pain in your body for last 1 month?	1. Yes 2. No			
Q4.	Where is your pain located? (Accept multiples)	1. Head 2. Teeth 3. Neck 4. Throat 5. Shoulder 6. Upper extremity	7. Arm 8. Elbow 9. Wrist 10. Hand 11. Chest	12. Upper back 13. Abdomen 14. Lower back 15. Buttock 16. Hip	17. Lower extremity 18. Knee 19. Ankle 20. Foot 21. Other
Q5.	How long have you suffered from pain?	1. Less than a month 2. More than a month, but less than 3 months		3. More than 3 months, but less than 6 months 4. More than 6 months	
Q6.	How often do you experience pain?	1. At all times 2. Daily 3. More than 2 times a week		4. Once a week 5. More than 2 times a month 6. Once a month	
Q7.	How much degree is your pain intensity?	Please use a 10-point scale where a "1" means "no pain at all" and a "10" means "the worst pain imaginable."			
Q8.	How many doctors have you seen for your pain?				
Q9.	What other remedies, apart from medications, have you ever tried to relieve your pain? (Accept multiples)	1. Electrotherapy *Heat* Traction 2. Massage 3. Osteopathy 4. Acupuncture 5. Diet therapy 6.Rehabilitation		7. Counseling 8. Relaxation therapy 9. Supplements 10. Over-the-counter drug 11. None 12. Others	
Q10.	Is your pain controlled well?	1.Yes 2.No			

et al (7), and was used after translation into Japanese, Thai, and Burmese. The survey was then translated from the respective mother language into English, and validation was confirmed in all 3 languages. The survey was performed by requesting all nursing staff working on the survey day in each facility to anonymously answer the questionnaire. This study was performed under approval (No. 1175) from the ethics committee of our university.

Patients in this study comprised 1,000 nurses (32 men, 968 women) with a mean age of 37.4 ± 11.2 years (range, 19 – 70 years) in Japan, 448 nurses (22 men, 423 women, 3 unknown) with a mean age of 37.5 ± 10.1 years (range, 22 – 59 years) in Thailand, and 405 nurses (16 men, 389 women) with a mean age of 29.5 ± 6.2 years (range, 21 – 59 years) in Myanmar. No significant differences in gender ratios of respondents were apparent between countries, whereas Myanmar respondents were significantly younger than those in Thailand and Japan ($P < 0.05$). The collection rate of the questionnaire was 1,000 (97.3%) of 1,028 patients in Japan, 448 (97.6%) of 459 patients in Thailand, and 405 (98.8%) of 410 patients in Myanmar, thus achieving retrieval rates ≥ 95% in each country.

For judgment of chronic pain, partially modified judgment criteria of Breivik et al (7) were used and those respondents meeting all 4 conditions of the following were judged as showing chronic pain: 1) pain persisting for ≥ 3 months; 2) pain felt within the preceding one month; 3) frequency of feeling pain ≥ 2 times/week; and 4) degree of pain ≥ 5 on a 10-point Numeric Rating Scale with 1 = no pain at all and 10 = the worst pain imaginable.

The survey data were used to calculate chronic pain prevalence, chronic pain prevalence by generation, pain site, presence or absence of consultation with doctors, methods of handling pain other than consultation with doctors, and whether pain was controlled for each country. The results were then compared between countries.

Statistical Analysis

We used the Kruskal-Wallis test to investigate intergroup differences among the 3 groups. When the overall differences were statistically significant, a post hoc analysis was performed using the Steel-Dwass test for multiple comparisons among the 3 groups. Values of $P < 0.05$ were considered statistically significant.

Results

The number of chronic pain patients was 175 of 1,000 respondents in Japan (prevalence, 17.5%), 89 of 448 respondents in Thailand (prevalence, 19.9%), and 24 of 405 respondents in Myanmar (prevalence, 5.9%). The prevalence of chronic pain was significantly lower in Myanmar than in Japan or Thailand ($P < 0.01$). Chronic pain prevalence by generation (Table 2) showed similar tendencies for Japan and Thailand, whereas Myanmar showed significantly lower prevalences in the 20s and 40s than in Japan or Thailand ($P < 0.05$), and significantly lower prevalence in the 30s than in Thailand ($P < 0.01$).

Table 2. *Prevalence of chronic pain.*

	Japan	Thailand	Myanmar	*P* value[a]	*P* value[b]
	% (n)	% (n)	% (n)		
All	17.5 (175/1000)	19.9 (89/448)	5.9 (24/405)	< 0.01	< 0.01[c]
Age					
~29	11.6 (35/302)	12.2 (17/139)	5.4 (14/257)	<0.05	< 0.05[d]
30~39	13.7 (39/285)	22.4 (26/116)	6.9 (8/116)	<0.01	< 0.01[e]
40~49	23.5 (58/247)	21.4 (27/126)	0 (0/24)	<0.05	< 0.05[f]
50~59	26.1 (36/138)	28.4 (19/67)	25.0 (2/8)		
60~	25.0 (7/28)				

a *P* value was calculated using the Kruskal-Wallis test.
b *P* value was calculated using the Steel-Dwass test as post hoc test.
c There was a significant difference between Myanmar and Japan or Thailand.
d There was a significant difference between Myanmar and Japan or Thailand.
e There was a significant difference between Myanmar and Thailand.
f There was a significant difference between Myanmar and Japan or Thailand.

The most frequent pain sites (Table 3) were the lower back, head, and shoulders in Japan, and the shoulders, ankle, upper back, and head in Thailand, whereas in Myanmar, with few chronic pain patients, no clear certain tendencies were observed. In Japan, the low back pain rate was higher than in the other countries, while Thailand showed a higher rate of ankle pain rate compared to the other countries.

With regard to the treatment of chronic pain, the number of doctors with whom patients had consulted is shown in Table 4. The results show that Japan and Thailand have similar tendencies; in Japan, 5 patients (2.9%) had consulted with ≥ 6 doctors, while in Myanmar, 75% of patients had not consulted a doctor. The most frequent method for handling pain other than consultation with doctors (Table 5) was over-the-counter drugs in Japan, massage in Thailand, and relaxation therapy (meditation) in Myanmar. Sufficient control of pain was seen in 59 (33.7%) of 175 patients in Japan, 34 (36.0%) of 89 patients in Thailand, and 12 (50.0%) of 24 patients in Myanmar. Patients in Myanmar thus showed the best rates of control, but no significant differences were apparent between countries. In Myanmar, 8 patients reported using meditation and all achieved sufficient control of pain.

Discussion

Chronic pain is one of the major health problems in humans, and various epidemiological surveys have been performed in a variety of countries. The prevalence of chronic pain is reportedly in the range of 10% – 55% (2-8,13,14). Most reports are from Europe and the United

Table 3. *Sites of chronic pain.*

	Japan (n=175)	Thailand (n=89)	Myanmar (n=24)
	% (n)	% (n)	% (n)
Head	56.0 (98)	34.8 (31)	16.7 (4)
Teeth	13.7 (24)	6.7 (6)	16.7 (4)
Neck	32.0 (56)	32.6 (29)	16.7 (4)
Shoulder	53.1 (93)	46.1 (41)	25.0 (6)
Upper back	14.3 (25)	36.0 (32)	0 (0)
Lower back	74.3 (130)	30.3 (27)	25.0 (6)
Abdomen	9.1 (16)	5.6 (5)	16.7 (4)
Knee	19.4 (34)	20.2 (18)	8.3 (2)
Ankle	6.9 (12)	39.3 (35)	0 (0)

Multiple answers were allowed.

Table 4. *Number of doctors the subjects have consulted for their pain.*

	Japan (n=175)	Thailand (n=89)	Myanmar (n=24)
	% (n)	% (n)	% (n)
0	31.0 (54)	34.8 (31)	75.0 (18)
1	24.6 (43)	16.9 (15)	16.7 (4)
2	23.0 (40)	22.3 (20)	8.3 (2)
3	12.1 (21)	19.1 (17)	
4	2.9 (5)	3.4 (3)	
5	4.0 (7)	3.4 (3)	
6 or more	2.9 (5)		

Table 5.*Comparison of treatments for chronic pain among three countries.*

	Japan (n=1000)			Thailand(n=448)			Myanmar (n=405)		
	Total number	SC (%)	NC (%)	Total number	SC (%)	NC (%)	Total number	SC (%)	NC (%)
All participants with chronic pain	175	59 (33.3%)	116 (66.7%)	89	32 (36.0%)	57 (64.0%)	24	12 (50.0%)	12 (50.0%)
Taking medical advices	120	40 (33.3%)	80 (66.7%)	58	21 (36.2%)	37 (63.8%)	6	2 (33.3%)	4 (66.7%)
Over-the-counter drugs	29	14 (48.3%)	15 (51.7%)	0	0	0	0	0	0
Relaxation therapy	4	0 (0%)	4 (100%)	2	2 (100%)	0	8	8 (100%)	0
Rehabilitation	5	0 (0%)	5 (100%)	8	4 (50.0%)	4 (50.0%)	0	0	0
Osteopathy	15	2 (13.3%)	13 (86.7%)	0	0	0	0	0	0
Massage	26	6 (23.1%)	20 (76.9%)	22	9 (40.9%)	13 (59.1%)	4	2 (50.0%)	2 (50.0%)
No any treatments	6	4 (66.7%)	2 (33.3%)	4	1 (25.0%)	3 (75.0%)	4	2 (50.0%)	2 (50.0%)

SC: Sufficient control of pain NC: No control of pain

States, representing advanced countries, whereas this study reported results of an epidemiological survey on chronic pain in Myanmar, thus providing new information on one of the least developed countries.

According to the results of various epidemiological surveys, risk factors for the development of chronic pain include age, women, overwork, obesity, and psychological loading such as depression or anxiety (6,15,16). The present study limited patients to the nursing staff. Therefore, it is presumed that there were no elderly patients ≥ 65 years old; the vast majority were women; education levels were broadly similar; and no great difference in working content or psychological load on the job was evident between countries, which should have made the patient groups in the 3 countries broadly comparable. The results showed that prevalences of chronic pain among Japanese and Thai nurses were 17.5% and 19.9%, respectively, with nearly no difference; whereas the prevalence in Myanmar was 5.9%, significantly lower than in Japan or Thailand. The following reasons were considered: in Myanmar, patients were younger, psychological loads such as depression or anxiety in daily living may be less, and there may be a number of low weight patients. National character and religious sentiments may also have some influence (11). In order to logically explain the present results, further study may be necessary.

Nurses have been reported to often develop musculoskeletal system disorder such as low back pain because they must hold patients in their arms, and move around, stand, and crouch down all day long in the hospital (17-20). Daraiseh et al (21) reported that incidences of chronic low back pain, shoulder pain, upper limb pain, and ankle pain were 50%, 42%, 14%, and 20%, respectively, and mentioned that low back pain was most frequent. However, the present results did not show any particular tendency in terms of pain sites between the 3 countries, and we considered that the sites at which chronic pain tends to occur may differ country by country.

With regard to treatment for pain, various treatments or methods of coping were used in the 3 countries. However, in each country, not many patients achieved sufficient control of pain. In particular, patients who consulted with doctors often failed to control pain; this clearly represents a major obstacle for doctors. As handling methods other than consultation with doctors, over-the-counter drugs, and massage failed to sufficiently control chronic pain, whereas all patients who performed relaxation therapy or meditation in Myanmar reported that pain was well controlled. With regard to meditation treatment for chronic low back pain, Morone et al (22) reported that Chronic Pain Acceptance Questionnaire Total Score was significantly improved after meditation, and Sooksawat et al (23) reported that McGill Pain Questionnaire and SF-36 Pain Scale scores were improved after meditation, suggesting that this modality may be useful for the treatment of chronic pain.

Limitations

Limitations of this study were the cross-sectional design study, the small number of hospitals included (2 hospitals in Japan, and one each in Thailand and Myanmar), the limitation of patients to nursing staff, and the omission from the questionnaire of questions regarding body height and weight, working situation, family background, trauma history, sports activity history, smoking history, psychological/character tests such as depression and anxiety, QOL, and pain levels of patients. As a result, more detailed surveys seem warranted.

Conclusion

This study represents the first epidemiological survey in the world to examine chronic pain in one of the least developed countries. We compared chronic pain prevalence among nursing staff in the 3 countries of Japan, Thailand, and Myanmar. The prevalence of chronic pain was significantly lower ($P < 0.01$) in Myanmar than in Japan or Thailand. With regard to the site and treatment of chronic pain, no clear tendencies were observed between countries, suggesting that frequency and the character of chronic pain differ from county to country around the world. In particular, marked differences may exist in the least developed countries compared to advanced and developing countries.

Conflicts of interest

No funds were received in support of this work. No benefits in any form have been or will be received from a commercial party related directly to the subject of this manuscript.

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