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Pain and Disability, Perceptions and Beliefs of a Rural Indian Population: A WHO-ILAR COPCORD Study

ARVIND CHOPRA, MANJIT SALUJA, JAYSHREE PATIL, and HANUMANT S. TANDALE

ABSTRACT. Objective. The WHO-ILAR Community Oriented Program for Control of Rheumatic Diseases (COPCORD) primarily aims to estimate the burden of rheumatic-musculoskeletal symptoms/disorders (RMS). We investigated data on pain and disability, perceptions and beliefs in the first rural community based COPCORD study in India.

Methods. A total of 4092 adults were interviewed (response rate 89%) in a population survey (Stage I) in Bhigwan village in 1996 using modified COPCORD core questionnaires. Twenty-one trained volunteers completed the survey in 5 weeks. Those reporting RMS were identified (Phase 1) to complete a self-evaluation questionnaire (Phase 2) prior to rheumatological evaluation (Phase 3). Phase 2 included questions on perceptions and beliefs regarding pain, effect on life, work and socioeconomic factors, disability, and therapy; only the moderate and severe grades were considered significant. Patients marked their pain sites on a manikin during the presurvey week. A validated modified Health Assessment Questionnaire disability index (HAQDI) in the local language evaluated functional disability.

Results. RMS were the predominant ailments reported by 746 adult villagers (18.2%; 95% CI 17.1, 19.2). Moderate pain of > 2 years' duration was reported by almost 60% of RMS patients. Neck (6%), lumbar (11.4%), shoulder (7.4%), elbow (6.5%), wrist (6.4%), hand (6.1%), knee (13.2%), calf (6.6%), and ankle (6.5%) were the common painful sites, predominantly in women; 91%, 89%, and 31% with RMS reported a significant grade of pain, RMS illness, and disturbed sleep, respectively. In the age group 25–54 years, 21% of those with RMS perceived a significant effect on work ability, while less than 20% of those with RMS admitted a similar effect on their personal life (including finances). About 10% with RMS had ceased to work because of RMS. Among RMS subjects 21% scored a significant HAQDI, but many more reported significant difficulty (HAQ) in the individual items of walking, hygiene (squatting), arising (from sitting cross-legged), reaching, and occupational/household chores; this corresponded to the dominant pain sites in low back and lower limbs. Oral tobacco use was reported to be significantly greater ($p < 0.001$) in the RMS patients. Past trauma was recalled by 23% of patients, and many connected this to their RMS. Modern medicines were consumed by 55% of patients with RMS. Among patients, 86% and 65% expected "pain relief" and "cure," respectively, from their doctor; 23% of patients wanted greater sympathy and attention. However, 21% of patients had never visited a doctor and were only identified by the COPCORD study.

Conclusion. The findings of this study (1) demonstrate that RMS, although a predominant ailment, has a modest effect on daily living in most subjects with RMS; (2) indicate there is inconsistency between the measures of pain and disability (using HAQ) and their effects; (3) describe the beliefs and expectations of the community. Based on the data and community support, the COPCORD has been continued for Stages II and III, especially with a view to health education. (J Rheumatol 2002;29:614–21)

Key Indexing Terms:

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The Community Oriented Program for Control of Rheumatic Diseases (COPCORD) was launched by the WHO–International League of Associations for Rheumatology (ILAR) in 1981¹. Its primary objective is to acquire data on the prevalence of rheumatic-musculoskeletal symptoms/disorders (RMS) and their related disability in rural communities in developing countries. The COPCORD epidemiological model, which is socioeconomically designed, targets the community RMS rather than specific diseases. The COPCORD model advocates a low

cost structure utilizing available local resources with minimal use of investigation (for diagnosis). The program implementation has 3 stages — collection of prevalence data (Stage I), identification of risk factors (Stage II), and control of “risk factors” and improved health care through health education and community oriented preventive strategies (Stage III). In Stage I, the data are collected from a population survey, in 3 successive phases: Phase 1, identification of those with RMS; Phase 2, record of patients’ history, symptomatology, and functional disability; and Phase 3, clinical rheumatological evaluation. COPCORD surveys²⁻⁵ have been completed in numerous Asia-Pacific countries. In 1996, the first Indian COPCORD was launched in Bhigwan village under the aegis of the Asia Pacific League of Associations for Rheumatology (APLAR).

This report presents data on the pain and disability, perceptions and beliefs of the Bhigwan rural community.

MATERIALS AND METHODS

Bhigwan village, spread over 8–10 km and about 560 m above sea level, is in the southwest state of Maharashtra in India (Figure 1) and is situated about 90 km from the Pune metropolitan on a national highway and rail line. The southern and western parts of the village are surrounded by hillocks and large stretches of backwater from the Ujani Dam. Essentially tropical, the region enjoys a cool winter (minimum temperature ~ 7–8°C) and hot summer (April–June, maximum temperature ~ 40–41°C), and a fairly heavy monsoon (June–September, 65–70 cm annual rainfall). Historically, the village records date back at least 300 years. The population is multireligious (Hindus 80%, Muslims 12%). Ethnically, the Maratha, who are mostly farmers, are the dominant community.

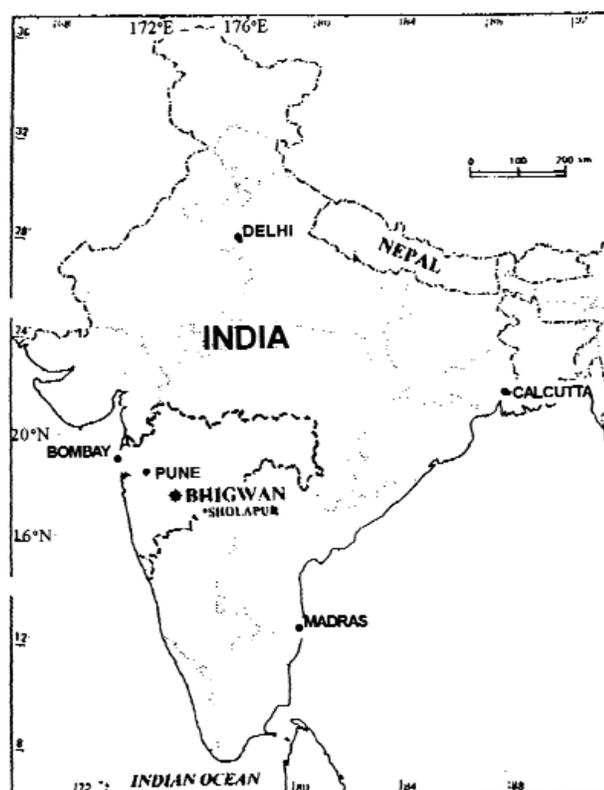


Figure 1. Location of Bhigwan village in Maharashtra state.

Methodology. Details, including the COPCORD questionnaires used in Bhigwan, have been published⁶. In the Bhigwan model, the 3 phases of Stage I were carried out concurrently. The village census was completed in February–March 1996 by 21 trained educated volunteers from Bhigwan designated as COPCORD health workers (CHW). The Bhigwan village population was estimated to be 7400 (4350 adults, defined as 15 years of age and over). The COPCORD rheumatology team included one rheumatologist (AC), one rural doctor (HT), 2 rheumatology research medical associates (JP and MS), one orthopedic surgeon, 2 medical secretaries, 3 data entry operators, and one laboratory technician. The questionnaires, in the local Marathi language, were essentially close structured but designed to incorporate any further relevant information, and were carried out by the CHW through personal interviews.

The Phase 1 questionnaire collected basic demographic data with questions on personal habits, wages, and nature of work/employment. Respondents were asked to mark on a manikin “pain/swelling/stiffness/tenderness” (Phase 2) experienced during the 7 day period prior to the survey. The CHW explained the difference between a “joint” and the “adjoining soft tissues” on the manikin. The next question listed the sites (with an adjacent box to tick if positive) for similar symptoms experienced during the period preceding the presurvey week. Succeeding questions were to define the duration, nature, and course of pain and the RMS illness. Respondents used their own judgment to describe their assessment of the effect (none, mild, moderate, severe) of their pain and disability on daily life, personal relationships, socioeconomics, sleep, and ability to work. Grades of “moderate” and “severe” effect were considered significant in the data analysis. The Phase 2 questionnaire also related to the etiology of RMS and the therapeutic resources that were available and utilized.

Health Assessment Questionnaire. The Bhigwan questionnaire was based on the modified Stanford Health Assessment Questionnaire (MHAQ)⁷, and attached to the Phase 2 questionnaire⁶. An Indian version of the HAQ was validated by the authors^{8,9} for use in drug trials and was designed to assess functional ability according to the traditional Indian customs of daily living (e.g., squatting and sitting cross-legged; cycling and using buses and autorickshaws for transportation). It was further modified for the rural customs and dialect of Bhigwan. This reduced the total number of questions in the standard 8 HAQ activities (dressing, arising, eating, walking, hygiene, reach, grip, household work and occupation). The changes in the Bhigwan HAQ were (1) no separate questions were framed for washing, drying, and combing hair as they are all part of the normal dressing activity; (2) within hygiene, “bathing” (washing and drying the body) included actions to lift water out of a bucket and pour it on the head and thus a separate question in “reach” on “lifting weight above the head level” was not included; also this action was perceived as part of dressing, household jobs, and occupation; (3) the hygiene section also contained questions on squatting (for toilet) and bathing; (4) the question on reach then primarily targeted actions to “lift objects from the ground”; (5) “arising” pertained to “sitting cross-legged on the floor and getting up.”

The modified HAQ was finalized by consensus between the members of the Bhigwan COPCORD team and prior to its application was pilot tested in the rural community. The total HAQ score (maximum 24) was averaged for the 8 activities into a HAQ disability index (HAQDI, range 0–3), each activity being scored on the basis of difficulty (none = 0, little = 1, much = 2, unable = 3). The individual activity score was upgraded by 1 (maximum possible score = 3) if the individual required an assist device or help from another person. Based on the HAQDI, each patient was arbitrarily classified (0 = no difficulty; 0–1 = mild; > 1–1.5 = moderate; > 1.5 = severe) by the author (AC).

Statistical analysis. Data were entered into an indigenously designed software program, using MS FoxPro v. 2.6 for Windows. Point prevalence was calculated on a survey population of 4100 adults, not standardized for age-sex distribution of the Indian or any other population. The 95% confidence limits (CI, $z_{\alpha} = 1.96$) for prevalence were estimated using the method of

ratio and proportions¹⁰. A control group for comparison was defined as the adult village population (n = 3346) after excluding the RMS subjects.

Although children were included in the survey, this report pertains only to the adult population.

RESULTS

A total of 4092 adults (89% respondents as per the electoral list) were surveyed⁶. The age and sex distribution (female:male = 1043:1000) was similar to the national census population (Figure 2)¹¹. RMS disorders were identified in 746 respondents (18.2%; 95% CI 17.1, 19.4). These were the most frequent community ailments (Phase 1)⁶; other disorders recorded were abdominal (2.9%), cardiac (0.4%), high blood pressure (1.1%), diabetes (0.4%), and tuberculosis (0.15%).

Occupations. The primary occupation for 55% of the villagers was farming (cultivation or farm labor). Those reporting business and government employment as their primary occupation also owned farmlands and devoted significant time to cultivation. Among women, 26% in the age group 25–54 years reported working in both the home and fields. The women often carried loads (25–30 kg) on their heads, usually for 1.5–2 km, as part of their daily chores, carrying firewood or water vessels and farm produce. Wells, public hand pumps, and a few community taps provided water. In addition to bearing loads on the head, women often carried loads such as a water vessel or a child close to the waist. Overall, 19% of men and 6% of women in the age group 25–54 years considered their work to be “heavy”; the rest considered it light or moderate.

Personal habits. The frequency of tobacco/mishri use by both men (55.1%) and women (47.1%) among the subjects with RMS was significantly higher (p < 0.001) than the controls (men 42.7%, women 33.3%).

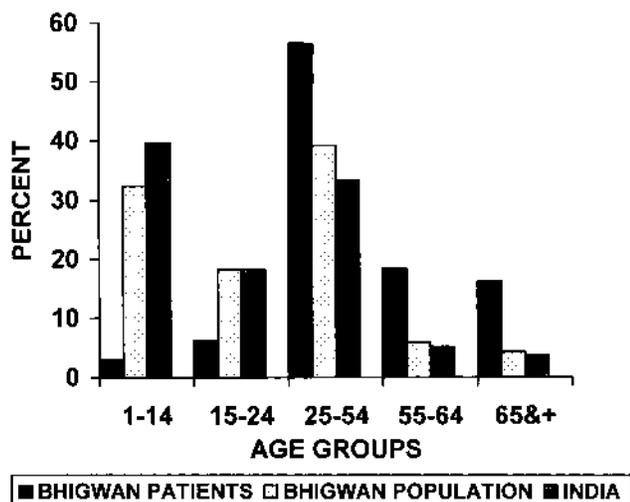


Figure 2. Distribution (percentage) of the survey population and patients and the Indian national census population for 1991, for selected age groups.

Pain and illness. No patient reported swelling and/or stiffness in the absence of pain. Table 1 shows the percentage frequency of current painful sites marked by patients on the manikin; pain at bilateral sites was considered as a single site. Women reported a higher prevalence at each painful site than men (Table 1); at some painful sites, the frequency in women was 2–3 times that of men. Neck (6%), lumbar (11.4%), shoulder (7.4%), elbow (6.5%), wrist (6.4%), hand (6.1%), knees (13.2%), calf (6.6%), and ankle (6.5%) were the common painful sites. Excluding the back (inclusive of neck and buttocks), knee (69% of the RMS) was the single most frequent painful site in both sexes. The prevalence of painful ankle-foot and wrist-hand regions was similar (~ 35% of RMS), although it was much less for the heel-sole-foot region (20–25% of RMS). Calf pain was more frequent than thigh pain. In the upper limb, shoulder pain (40% of patients) was dominant.

The duration of pain was 1–2 years in 33%, 2–5 years in 15%, 5–10 years in 17%, and > 10 years in 5% of patients. The duration of pain was less than a week in only 9 patients. Patients reported the intensity of their pain to be moderate (56%) and severe (35%). The occurrence of “maximum pain” was not associated with any particular period of the day or night; 18.7% and 25.9% of patients recorded pain in the early morning hours and mid-day, respectively. The variable course of the illness was addressed in the Phase 2 questionnaire. Only 2 RMS subjects reported complete

Table 1. Frequency (percentage) of current pain at various sites (indicated on a manikin) in patients from the Bhigwan survey.

Pain Sites	Men, n = 2003	Women, n = 2089	Frequency, n = 4092 (95% CI)
Neck	3.4	8.4	6 (5.28, 6.74)
Thoracic	3.4	6.9	5.1 (4.42, 5.78)
Lumbar	7.3	15.4	11.4 (10.43, 12.37)
Buttock	1.2	2.8	2.1 (1.66, 2.54)
Coccyx	2.8	5.0	4.1 (3.45, 4.65)
Head/occipital	0.4	2.8	1.6 (1.22, 1.98)
Temporomandibular	0.09	0.14	0.4 (0.23, 0.57)
Trapezius/scapular	1.9	4.3	3.15 (2.62, 3.68)
Chest	0.9	2.2	1.6 (1.22, 1.98)
Costal	0.5	1.7	1.1 (0.78, 1.42)
Shoulder	4.5	10.1	7.4 (6.6, 8.2)
Upper arm	1.9	4.7	3.3 (2.75, 3.85)
Elbow	3.9	9.0	6.5 (5.75, 7.25)
Forearm	1.2	2.8	2 (1.57, 2.43)
Wrist	3.6	9.0	6.4 (5.66, 7.14)
Hand	3.9	8.1	6.1 (5.37, 6.83)
Hip	0.8	1.1	1 (0.7, 1.3)
Thigh	2.8	5.9	4.4 (3.77, 5.03)
Knee	9.6	15.7	13.2 (12.17, 14.23)
Calf	4.4	8.6	6.6 (5.84, 7.36)
Ankle	4.5	8.4	6.5 (5.79, 7.30)
Heel	1.5	3.9	2.7 (2.2, 3.2)
Sole	1.2	2.9	2.1 (1.66, 2.54)
Foot	0.9	2.0	1.4 (1.03, 4.77)

recovery. Remissions and relapses were reported by 11% of RMS subjects, partial recovery followed by “flares” by 28%, partial recovery by 12%, slow 44% and rapid progression by 4%. The overall severity of illness was recorded as mild in 11%, moderate in 60%, and severe in 29% of the RMS subjects.

Some disturbance of sleep was reported by 52% of respondents. In 31% of RMS subjects, there was a moderate to severe sleep disturbance, and 5% RMS reported insomnia.

General disability. In Phase 1, 19 men (1.7%) from the total population sample in the age group 25–54 years reported cessation of work due to RMS. Out of a total of 128 men with RMS in the 25–54 year age group, 8 men (6.3%) reported a change in job. Overall, almost 10% of the RMS subjects, equally divided between the sexes, reported inability to continue work.

In Phase 2, RMS subjects were asked, “What is the effect or impact of RMS pain and disability on your life,” and their assessments are shown in Table 2. The observations were that (1) 70% of individuals reported an effect on their work ability and 66% reported some effect on their finances; and (2) they were less likely to report an effect on family, social, and marital relationships (36%, 30% and 20%, respectively).

HAQ disability. Walking, hygiene, arising, occupation, and reaching were found to be the major problems with significant difficulty among the individual HAQ activities (Table 3). An inability to walk, work, and manage hygiene/care was

expressed by 11%, 4%, and 4% of subjects, respectively. Mild, moderate, and severe grades of disability on the HAQDI were reported by 74%, 15%, and 6% of RMS subjects, respectively. Five percent of those with RMS did not record any difficulty in any of the HAQ items and their HAQDI score was nil.

Trauma. A history of trauma that they believed could have contributed to their current ailment was recorded by 169 (23%) of those with RMS; of these trauma victims, motor vehicle accidents were reported by 29 (17.2%) and falls by 119 (70.4%). While 77% of the vehicle accident victims were men, equal numbers of men and women had sustained an injury by falling in the field or home. Among the trauma victims, 82% recorded a nonfracture soft tissue injury.

Community concepts and beliefs. Aging, weather, mental stress, and heredity were considered to be the cause of RMS by 20%, 11%, 6%, and 1.5% of individuals, respectively. In RMS subjects, 41.3% did not find any association with weather. However, 2.7%, 15.5%, and 28.2% reported an association of RMS with summer, monsoon, and winter seasons, respectively. In response to the question on expectations from the doctor, the RMS subjects recorded pain relief (85.9%), relief of swelling (13%), sympathy (22.5%), more time for consultation (5.6%), and cure (65.2%). Altogether, 14.9% of those with RMS (62% women) desired more information about their illness; 93.9% RMS denied having sufficient knowledge about the precise diagnosis and nature of their ailment.

Treatment resources. There were at least 11 registered general practitioners (2 MBBS, others trained in the Ayurvedic system and homeopathy) in private practice in the region during the survey period. All prescribed modern medicines. There is a government-run primary health center in Bhigwan with 2 doctors. This health center, with routine outpatient, laboratory and basic surgical/operative facilities, is expected to provide medical care to 30,000 people in the region. The main concern of the primary health center is to meet the treatment targets of the national health programs in family and child welfare, malaria, tuberculosis, poliomyelitis, and leprosy. Private practice orthopedic services (none in rheumatology) are available about 40 km away. The nearest government hospital (over 1000 beds) with specialist services is in Pune City and is part of a respected medical college.

In the study population, 21.3% of those with RMS reported having never been to any doctor or healer; 3.2% reported self-medication and 6.6% knew nothing about the medication they had taken; 51% had consulted general practitioners in the village, and a further 58% and 57% recorded taking modern medicine pills and injections, respectively. Only 15% of the RMS subjects visited the Bhigwan primary health center and some of them had consulted the government hospital in Pune to obtain free treatment. Among

Table 2. Distribution (percentage) of patients from the Bhigwan survey according to the effect of pain/disability on selected activities/relationships.

Effect on	None	Mild	Moderate	Severe
Family	64.2	28.2	6	1.6
Social	69.6	24.6	4.8	1
Marital	79.7	16.8	2.6	0.9
Work ability	29.3	48.5	13.4	8.7
Finances	44	37.4	13.5	5.1

Table 3. Distribution (percentage) of patients aged 25–54 years (male = 133, female = 276) from the Bhigwan survey according to HAQ scores in individual activities.

Difficulty Activity	Much Difficulty			Unable To Do		
	Men	Women	Total	Men	Women	Total
Dressing	3.0	1.4	2	0	0.3	0.2
Arising	22.5	15.9	18	2.2	3.2	2.9
Eating	3.0	3.6	3.4	0	0.7	0.5
Grip	0.75	2.1	1.7	0.75	0	0.2
Hygiene	30	22.4	24.9	3.75	4.7	4.4
Reaching	14.2	13.7	13.9	1.9	2.5	2.2
Walking	29.3	28.6	28.9	9.7	11.5	11
Occupation	17.2	9.0	11.7	2.2	6.5	4.4

subjects with RMS, 25.2% recorded a consultation with a specialist (practicing in neighboring town or city). Only 2.1% and 4% individuals reported taking homeopathy pills and herbal/Ayurvedic medicines, respectively; 2.5% and 1.3% of the RMS also reported consulting traditional folk medicine healers and religious people, respectively.

DISCUSSION

Asia-Pacific COPCORD rural studies, such as that in Bhigwan, have highlighted the importance of rheumatic disorders in the developing nations^{1,2}. However, there is insufficient COPCORD community data regarding community beliefs, concepts, and perceptions in the literature. It is the community's perception about pain, functional disability (e.g., using the HAQ), and disease that should form the basis for health education and other intervention programs. The strength of the Bhigwan COPCORD rests largely on the grassroots community support. The Bhigwan COPCORD design was dictated by the requirements of the community⁶. It was designed to capture a large database oriented towards "community concerns and practices," and this report addresses some of these issues.

Painful RMS are a major community health problem worldwide. Unlike the previous COPCORD, this survey was designed to gather information on all medical problems of the community, and it clearly determined that RMS is the dominant ailment. This COPCORD has also reported a clinical diagnostic account (Phase 3) of all the RMS subjects identified, and the failure to provide a precise diagnosis in numerous cases^{6,12}. The predominant RMS in the Bhigwan community was soft tissue rheumatism and related ill defined "aches and pains."

Cross-cultural adaptations of the English language terminology into the local language for population surveys pose unique problems¹³. With reference to painful "soft tissue sites," there can be major comprehension differences between medical language and the community descriptions. Also, the personnel employed to collect community data in the various COPCORD surveys have had different backgrounds (e.g., nurses in Malaysia, primary health care workers in Indonesia, a midwife in the Philippines, and village volunteers in Bhigwan), which may have influenced community data acquisition. The Bhigwan and the Philippines COPCORD³ have used a manikin to indicate sites of pain. Numerous sites (Table 1), e.g., chest, upper arm, forearm, trapezius and scapular region, buttock, calves, ankles, feet, heels and soles, were not described in other COPCORD studies.

Notwithstanding methodological issues and differences in age distributions of the populations, some of the crude prevalence results from the various COPCORD rural surveys²⁻⁴ can be compared to obtain an overview (Table 4). The prevalence figures in Table 4 have not been standardized for differences in age and sex distribution of the popu-

lation. Different styles of carrying weights and working in fields and homes may influence the sites of pain. The prevalence of painful sites in the back and lower limbs in Bhigwan and the Indonesian rural survey is similar. The high prevalence of neck and back pains in rural Australia (Table 4) could not have been due to carrying loads for daily living and occupation. The prevalence of pain in the knee (27%) and lumbar spine (28%) was unusually high in the North Chinese population¹⁴. These data from an ILAR survey comparable to the COPCORD were collected by doctors. Despite the fact that the villagers in Bhigwan spent a large part of the day on their feet, working, squatting, and often walking barefoot, the pain in the heel-sole-foot region was comparatively low.

From the Bhigwan COPCORD Stage I, Phases 1 and 2, it can be reasonably concluded that not more than 2% of the population and 10% of those with RMS had ceased to work because of their RMS. Almost 90% of the RMS reported significant pain and/or illness, but less than 25% perceived a moderate or severe influence on work ability and personal life (Table 2), suggesting that only those with severe pain perceived a major impact. Only 19% of RMS subjects reported a moderate or severe financial effect. Medical insurance is almost nonexistent in rural India. Ability to work and earn a modest livelihood is the major preoccupation.

A majority of the villagers sat (squatting or sitting cross-legged) on the ground for most of their activities of daily living, work, leisure, and toilet. We found 20–40% of those with RMS experienced significant difficulty in one or more individual HAQ activities (Table 3) connected with walking, hygiene, arising, and occupation/household chores. This corresponds with the dominant distribution of pain sites in the low back and legs (Table 1). In contrast, over 95% of patients reported minor difficulty in dressing, eating, and grip. In particular, knee pain (13%) rather than shoulder pain (7%) seemed to have contributed most to functional disability.

From a different perspective, a majority (at least 60%) of those with RMS recorded mild difficulty (in about 5% it was nil) in each of the individual HAQ activities, and 74% of the RMS were classified as mild on the HAQDI; 21% of the RMS had a moderate or severe HAQDI score. However, numerous RMS individuals with mild HAQDI reported significant difficulty in individual items (Table 3), especially those concerning lower limb use. We are not aware of any population studies in the developing countries where an appropriate form of the HAQ has been used to measure functional disability in RMS. Although the HAQ is best applied to patients with rheumatoid arthritis and is a core set measure¹⁵ of its activity, it has a generic applicability in RMS^{16,17}. In epidemiological studies such as Bhigwan, with a wide spectrum of RMS, a significant functional disability in any individual HAQ item or activity cannot be over-

Table 4. Prevalence (percentage) of rheumatic complaints in the Southeast Asia rural COPCORD studies.

Site	Bhigwan, N = 4100	Indonesia ⁴ , N = 4683	Malaysia ² , N = 1267	Philippines ³ , N = 950	Australia ² , N = 1437
Neck pain	6	5	3.6	7.1	17
Dorsal pain	5.1	5	7	9.3	6.2
Lumbar pain	11.4	15	7	11	22
Shoulder	7.4	11	4	1.8	10
Elbow	6.5	10	2.7	1.7	6.3
Knee	13.2	12.2	11	6.1	15
Joint pain	15.8	18	9	—	32

N: Number of population surveyed in Stage I, Phase 1, except for Philippines (data available for phase 2 only).

looked, especially when the HAQDI is low. Summary HAQ may not capture the level of disability in such population studies. We propose to evaluate a weighted HAQDI in our population, which will take into consideration the higher grade of difficulty in any individual item or items despite a low HAQ score.

In our opinion, those with RMS in Bhigwan appeared comfortably tolerant towards their pain and level of functional disability. Despite RMS being the dominant community ailment, the majority of those with painful RMS reported a nil to mild impact (Table 2). Also, despite a higher grade of pain and HAQDI, more than 75% of those with RMS reported a nil to mild impact on their ability to work. However, some inconsistencies were found when interpreting and comparing the measures of pain intensity, impact on work ability and other socioeconomic factors (Table 2), and HAQ disability (Table 3). This is likely related more to the community beliefs and perceptions rather than to our data collection. Culture and tradition are generally believed to determine high pain tolerance in rural communities. About 21% of patients in the Bhigwan survey did not perceive a need to consult a doctor for their RMS. These were only identified because of the COPCORD search. All this suggests a strong adaptation and rehabilitative process inherent in the community framework or a strong sense of denial/survival. Finally, it strengthens our contention that although it is significant and widespread in this rural community, RMS overall has a modest influence on the lives of the majority.

The widespread tobacco usage observed in Bhigwan is alarming and may have influenced pain and adaptation in its several settings, including in the subjects with RMS. Mishri (in local dialect) is a form of burnt tobacco that is rubbed vigorously on the gums and teeth, using a finger; it is not chewed or swallowed, but after some time is spat out. Use of oral tobacco is an ancient custom in large parts of India. Besides the alleged use to cleanse teeth and stimulate bowels, the people of Bhigwan repeatedly told us that tobacco enhances their work performance by reducing fatigue and relieves body aches and pains at the end of a

hard day. It may be speculated that tobacco has helped this rural community to bear the RMS pain. This paradigm of tobacco use¹⁸ and RMS would need further scientific evaluation in socioanthropological studies.

Trauma related RMS is preventable and needs to be targeted aggressively, and this is an important component of the ongoing health education program (COPCORD Stage III) in Bhigwan. Simple measures to prevent accidents in the workplace and home will be advocated through didactic sessions and health education pamphlets and exploiting the popular local folklore and drama. Rural regions in general have poor records of safety in the workplace and scant attention is paid to simple accident-prevention measures within the farming community¹⁹; more accidents than in industrial regions have been reported. Almost 25% of patients from Bhigwan gave a history of trauma, and many considered it to be a contributory/risk factor for their ailment. While farming accidents were largely considered to be due to traditional outdated methods of farming, some of the road traffic vehicular/agricultural machinery accidents were likely to be due to rash applications of modern speed and technology.

Although not formally evaluated in this COPCORD survey, it is likely that non-accident trauma arising out of occupational overuse or repetitive stress to the musculoskeletal tissues, both in the workplace and homes, is causally related to the wide spectrum of soft tissue rheumatism in this community. It may be speculated that traditional human behavior and lifestyles in a community such as Bhigwan influence non-accident trauma. For example, we often observed women in fields squatting for prolonged periods to cut grass or harvest with a crude wooden handle sickle; this is likely to mechanically overstress the hand and wrist (the thumb in particular), low back, and knees. Such hypotheses will be explored further during the prospective COPCORD Stages II and III.

The author has published data²⁰ on the concepts and psychosocial beliefs of rheumatism patients evaluated in a large arthritis campaign held in the Pune metropolis, where free medical services were offered in medical camps. There are differences in the beliefs and perceptions about RMS

between rural Bhigwan and urban Pune — 33% of the urban patients versus 65% from the Bhigwan COPCORD expected the doctors to “cure the illness.” Of the urban subjects with RMS, 68% consulted a complementary or alternative system (Ayurvedic/herbal medicine being the most popular) for relief and 35% of patients used both systems concurrently. Only 32% of the urban subjects with RMS strictly adhered to the modern medicine system. In sharp contrast, less than 5% of the RMS in the Bhigwan COPCORD recorded the use of alternative medicine, and we find this difficult to believe. Bhigwan region is a renowned spiritual healing and Ayurvedic-herbal treatment center; numerous people from all over the state visit both the centers daily. However, on discreet inquiry during the followup phase, the majority of our RMS patients in Bhigwan did not express much belief in the benefits of alternative treatments. The promise of quick improvement that modern medicine alone provides was often felt to be crucial by this rural labor class.

Population based epidemiological surveys in developing countries are much more demanding — from socioeconomic and political issues to the actual methodology for data acquisition. These problems are compounded if the survey is to continue prospectively. However, none of the previous COPCORD projects have continued a longterm followup of the entire survey population to fulfill the objectives of Stages II and III. Encouraged by the results of the Stage I survey and the community response and support, the Bhigwan COPCORD is an ongoing project that has been extended to 2004. Indeed, the Bhigwan COPCORD has gone a step further. Based on community needs and socioeconomics, we are providing free rheumatology and related counseling outpatient services in the Bhigwan region (Figure 3) and a community education program based on a WHO sponsored comprehensive health education publica-

tion²¹. This publication in the local language is illustrated with cartoons based on community beliefs and perceptions and will be distributed free in the Bhigwan region, and the outcomes will be recorded.

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Figure 3. A COPCORD outpatient clinic in Bhigwan village.

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