# ANALGESIC USE AND ABUSE – A STUDY IN THREE SELECTED POPULATION GROUPS IN PENINSULAR MALAYSIA

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## SUMMARY

*A survey was conducted on three different groups of population viz. inpatients in the medical wards of General Hospital, Kuala Lumpur, the people of Kampong Pandan and two rubber estates as to their analgesic consuming habits. It is found that 0.5 to 2.0% of the people surveyed had consumed more than 2 kg of analgesics and 4.6 to 9.6% of the people surveyed had consumed more than 250g of analgesics. The commonest analgesic consumed is paracetamol followed by Chap Kaki Tiga and Chap Harimau. The commonest reason for consuming analgesic is headache. The implications of the above findings are discussed.*


## INTRODUCTION

Analgesic nephropathy is part of a wider clinical syndrome [1,2] seen in patients who ingest excessive amounts of 'headache powders', usually containing aspirin, phenacetin and caffeine. The clinical spectrum of the analgesic syndrome includes analgesic nephropathy, peptic ulcer disease, anaemia, neuropsychiatric disorders, ischaemic heart disease, toxaemia of pregnancy and premature aging.

Analgesic nephropathy occurs five to six times more frequently in females than in males and rarely occurs under the age of 30 years. It usually occurs in middle-aged females.

The diagnosis of analgesic nephropathy is made on the following criteria-history of analgesic abuse, demonstration of renal papillary necrosis and demonstration of chronic interstitial nephritis on renal biopsy.

Significant analgesic abuse may be defined as an intake of at least three APC powders per day for a minimum period of five years that is, an intake of 2 kg of aspirin or phenacetin. It is often difficult to elicit from patients a history of analgesic intake, and an indirect approach in questioning may be necessary.

Analgesic nephropathy has been reported from most of the so-called developed countries in the world including such unlikely places as the Middle-East and Japan. The incidence is commonly believed to be highest in Australia, Switzerland and Sweden. Many European countries seem to have an intermediate incidence of analgesic nephropathy in terms of reported cases, but it appears to be relatively rare in South America, the Middle-East and Asia.

It is important to be aware of the existence of analgesic abuse in the recognition of the disease. There is little doubt that analgesic nephropathy is often not recognised, and this is underlined by the recent 'discovery' of the condition in a number of countries and regions where it was formerly considered to be rare. The conclusions of many authors are remarkably similar in that they acknowledge a major problem (e.g. a 'scourge of the area') which has not been appreciated previously. [3]

The habit of analgesic abuse and the serious consequences of renal disease and renal failure is a major public health problem in the Australian community. Between 4.6% and 45.1% of different subpopulations in the community consume analgesics daily, often for inappropriate reasons. [4]

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In Australia, analgesic abuse causes terminal renal failure in 20% of those treated by dialysis and transplantation, [5] compared to 5.5% in Canada [6] and 3.1% in Europe. [7] In the USA analgesic nephropathy was found to be responsible for 7% of chronic renal disease in one survey. [8] The autopsy incidence of renal papillary necrosis in major Australian hospitals is between 3.6 and 20% and is much higher than that reported elsewhere in the world (0.1-4%). [4]

As no epidemiological data is available on analgesic abuse for any Asian country, it was decided to survey selected groups in Malaysia to determine if analgesic abuse is prevalent and if so the extent and factors contributing to it. This is important as analgesic abuse leads to analgesic nephropathy resulting in terminal renal failure requiring dialysis and/or renal transplantation, the cost of which is prohibitive.

## MATERIALS AND METHOD

Two population groups were surveyed as to their analgesic intake habits, one being hospital inpatients and the other being the community at large.

From January to June 1982, patients admitted to the medical wards at the General Hospital, Kuala Lumpur, were questioned as to whether they consume analgesics and if so, the type, quantity, frequency, duration and the reason for consumption of analgesics was ascertained.

In May 1982, a house-to-house survey was conducted in Kampong Pandan. All householders aged 11 and above were similarly questioned.

From April to August 1982, two rubber estates namely Hillside Estate (Dunlop), Seremban and Gomali Estate (Dunlop), Gemas were similarly surveyed. The survey was conducted on all subjects above the age of 11 and was on a house-to-house basis. Many of the workers were surveyed at the mill when they came to deliver the latex after they had completed tapping in the morning.

## RESULTS

There were 500 subjects in the hospital inpatient group and they were of both sexes, of all races namely Malays, Chinese and Indians and were of all age groups (Table I). There were 431 subjects in the Kampong Pandan group and they were all Malays except for two Indians (Table II). In the estate group there were 187 subjects and they were predominantly Indians, although there were some Chinese and Malays (Table III).

TABLE I
CLINICAL SURVEY — HOSPITAL INPATIENTS
GENERAL HOSPITAL, KUALA LUMPUR,
JANUARY — JUNE 1982

| Age (yrs) | Malay | | Indian | | Chinese | | Total |
|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | |
| 10 | 7 | 3 | 2 | 2 | – | 2 | 16 |
| 11-20 | 22 | 10 | 5 | 10 | 15 | 7 | 69 |
| 21-30 | 33 | 23 | 18 | 19 | 14 | 8 | 115 |
| 31-40 | 19 | 10 | 9 | 6 | 8 | 11 | 63 |
| 41-50 | 27 | 21 | 8 | 9 | 12 | 12 | 89 |
| 51-60 | 20 | 12 | 14 | 6 | 12 | 9 | 73 |
| 61-70 | 12 | 5 | 7 | 4 | 18 | 7 | 53 |
| > 70 | 4 | – | 5 | 1 | 7 | 5 | 22 |
| Total | 144 | 84 | 68 | 57 | 86 | 61 | 500 |

M — Male; F — Female.

TABLE II
CLINICAL SURVEY — KAMPONG PANDAN,
KUALA LUMPUR, MAY 1982

| Age (yrs) | Male | Female | Total |
|---|---|---|---|
| 11-20 | 9 | 25 | 34 |
| 21-30 | 100 | 116 | 216 |
| 31-40 | 66 | 48 | 114 |
| 41-50 | 20 | 16 | 36 |
| 51-60 | 16 | 9 | 25 |
| 61-70 | – | 5 | 5 |
| > 70 | 1 | – | 1 |
| Total | 212 | 219 | 431 |

TABLE III
CLINICAL SURVEY — DUNLOP ESTATE
(SEREMBAN/GOMALI)
APRIL/AUGUST — 1982

| Age (yrs) | Indian | | Chinese | | Malay | | Total |
|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | |
| 11-20 | 7 | 18 | 2 | 4 | – | – | 31 |
| 21-30 | 25 | 29 | – | 3 | 2 | 1 | 60 |
| 31-40 | 11 | 18 | 4 | 5 | – | – | 38 |
| 41-50 | 11 | 9 | 5 | 4 | 3 | 3 | 35 |
| 51-60 | 7 | 8 | – | 1 | – | – | 16 |
| 61-70 | 2 | 3 | – | 1 | – | – | 6 |
| > 70 | – | 1 | – | – | – | – | 1 |
| Total | 63 | 86 | 11 | 18 | 5 | 4 | 187 |

TABLE IV
TYPE OF ANALGESIC CONSUMED

| Type | General Hospital Kuala Lumpur | | Kampong Pandan Kuala Lumpur | | Dunlop Estate S'ban/Gomali | |
|---|---|---|---|---|---|---|
| | No. | % of total + | No. | % of total + | No. | % of total + |
| Panadol * | 21 | 4.2 | 20 | 4.6 | 10 | 5.3 |
| Chap Harimau * | 8 | 1.6 | 8 | 1.9 | – | – |
| Chap Kaki Tiga * | | | | | | |
| Aspirin * | 2 | 0.4 | – | – | – | – |
| Unidentified (Chinese Medicine) | – | – | 1 | 0.2 | – | – |
| Multiple types ** | 12 | 2.4 | 21 | 4.9 | 8 | 4.3 |
| Unspecified | 42 | 84 | – | – | – | – |

* drug consumed singly.
** includes Panadol, Dusil, Vinac, Dumin, Aspro, Chap Harimau, Chap Kaki Tiga.
\+ total refers to the study population listed above.

TABLE V
COMMON PROPRIETARY COMPOUND ANALGESICS USED IN MALAYSIA

| | | | | |
|---|---|---|---|---|
| Chap Kaki Tiga (1.13 g) | = | Caffeine citrate | – | 198mg |
| | | + | | |
| | | phenacetin | – | 385 mg |
| | | + | | |
| | | aspirin | – | 547 mg |
| Chap Harimau (1 g) | = | Caffeine citrate | – | 185 mg |
| | | + | | |
| | | phenacetin | – | 175 mg |
| | | + | | |
| | | aspirin | – | 540 mg |
| Tablet APC | = | Caffeine | – | 30 mg |
| | | + | | |
| | | phenacetin | – | 150 mg |
| | | + | | |
| | | aspirin | – | 225 mg |

Paracetamol is the commonest analgesic consumed (Table IV). If only those taking Paracetamol alone are considered, the figures range from 4.2 per 100 persons (hospital inpatients) to 5.3 per 100 persons (Dunlop Estate). Chap Harimau and Chap Kaki Tiga are the next commonly-consumed drugs, the figures ranging from 1.6 per 100 persons (hospital inpatients) to 1.9 per 100 persons (Kampong Pandan). Some subjects take multiple combinations of drugs.

The compound analgesic include Chap Kaki Tiga, Chap Harimau and tablet APC and they all contain aspirin, phenacetin and caffeine (Table V). Since 1981, phenacetin has been replaced by acetaminophen in Chap Kaki Tiga and by salicylamide in Chap Harimau.

The frequency of intake of analgesics in all the three groups range from monthly to daily (Table VI) and the duration of intake range from 3 months to more than 20 years (Table VII). 0.5% of the estate group, 1.2% of the Kampong Pandan group and 2.0% of the hospital inpatient group had consumed more than 2 kg of analgesics, an amount sufficient to cause renal impairment (Table VIII). 4.6% to 9.6% of the population surveyed had consumed more than 250 g of analgesics.

All age groups including those less than 20 years and those between 21 and 30 years as well as both sexes are involved in taking analgesics regularly (Table IX).

Headache is the commonest cause (44-52%)for consuming analgesics regularly (Table X). 2.0-10.6% of the subjects have been taking compound analgesics which contain aspirin for epigastric and abdominal pain.

## DISCUSSION

0.5-2.0% of the population surveyed had taken more than 2 kg of analgesics, an amount sufficient to meet the criteria of analgesic abuse. This amount is also sufficient to cause severe renal impairment. 4.6-9.6% of the subjects had consumed more than 250g of analgesics. Whilst this is far below the amount required to cause renal damage, it is important to note that these subjects have been and are taking analgesics regularly and

TABLE VI
FREQUENCY OF CONSUMPTION OF ANALGESICS

| Frequency | General Hospital Kuala Lumpur | | Kampong Pandan Kuala Lumpur | | Dunlop Estate S'ban/Gomali | |
|---|---|---|---|---|---|---|
| | No. | % of total* | No. | % of total* | No. | % of total* |
| Daily | 15 | 3.0 | 5 | 1.2 | 2 | 1.1 |
| Thrice/week | 8 | 1.8 | 6 | 1.4 | 4 | 2.1 |
| Twice/week | 10 | 2.0 | 6 | 1.4 | – | – |
| Weekly | 18 | 3.6 | 20 | 4.6 | 7 | 3.7 |
| Thrice/month | 1 | 0.2 | 5 | 1.2 | 1 | 0.5 |
| Once in two weeks | 12 | 2.4 | 1 | 0.2 | 4 | 2.1 |
| Monthly | 10 | 2.0 | 2 | 0.5 | – | – |
| Once in two-three months | – | – | 5 | 1.2 | – | – |
| Unspecified | 11 | 2.2 | – | – | – | – |
| Total | 85 | 17.0 | 50 | 11.6 | 18 | 9.5 |

* Total refers to the study population listed above.

TABLE VII
DURATION OF CONSUMPTION OF ANALGESICS

| Duration (yrs) | General Hospital Kuala Lumpur | | Kampong Pandan Kuala Lumpur | | Dunlop Estate S'ban/Gomali | |
|---|---|---|---|---|---|---|
| | No. | % of total* | No. | % of total* | No. | % of total* |
| 3 months | 5 | 1.0 | 1 | 0.2 | – | – |
| 6 months | 9 | 1.8 | 1 | 0.2 | – | – |
| 1 | 15 | 3.0 | 5 | 1.2 | – | – |
| 1 – 5 | 34 | 6.8 | 22 | 5.1 | 9 | 4.8 |
| 6 – 10 | 16 | 3.2 | 13 | 3.0 | 5 | 2.7 |
| 11 – 20 | 5 | 1.0 | 3 | 0.7 | 3 | 1.6 |
| > 20 | 1 | 0.2 | 5 | 1.2 | 1 | 0.5 |
| Total | 85 | 17.0 | 50 | 11.6 | 18 | 9.6 |

* Total refers to the study population listed above.

given sufficient time will eventually meet the criteria for analgesic abuse. Analgesic abuse is therefore prevalent in the Malaysian community. The figures obtained in the above study, however cannot be extrapolated to apply to the whole Malaysian community as the populations chosen were biased and did not include all segments of the community.

In Australia, United Kingdom and in the Scandinavian countries analgesic abuse is predominantly in middle-aged women. They tend to have other addictive habits like purgative abuse, smoking, alcoholism and the use of psychotropic drugs and sleeping tablets. Certain personality traits and inadequacies have been identified, and these include introversion and neuroticism on the background of disturbed family and social circumstances. [4] This study reveals an equal incidence in both sexes, there being no female preponderence. What is also striking is the occurrence of analgesic abuse in the much younger age groups than in the West. Psychological profiles were however not determined in this study.

All races *viz;* Malays, Chinese and Indians take analgesics regularly but in view of the biased nature of the study, it will not be possible to compare the difference of analgesic abuse in the three races.

The commonest analgesic used is paracetamol

TABLE VIII
AMOUNT OF ANALGESIC CONSUMED — ASA, PHENACETIN, PARACETAMOL

| Amount (gram) | General Hospital Kuala Lumpur | | Kampong Pandan Kuala Lumpur | | Dunlop Estate S'ban/Gomali | |
|---|---|---|---|---|---|---|
| | No. | % of total* | No. | % of total* | No. | % of total* |
| < 100 | 37 | 9.4 | 5 | 3.7 | – | – |
| 101 – 250 | 10 | | 11 | | – | – |
| 251 – 500 | 3 | 0.6 | 17 | 3.9 | 7 | 3.7 |
| 501 – 1,000 | 6 | 1.2 | 7 | 1.6 | 8 | 4.3 |
| 1,001 – 2,000 | 4 | 0.8 | 5 | 1.2 | 2 | 1.1 |
| 2,001 – 5,000 | 7 | 1.4 | 3 | 0.7 | 1 | 0.5 |
| 5,000 – 10,000 | 1 | 0.2 | 2 | 0.5 | – | – |
| > 10,000 | 2 | 0.4 | – | – | – | – |
| Unable to assess | 15 | 3.0 | – | – | – | – |
| Total | 85 | 17.0 | 50 | 11.6 | 18 | 9.6 |

* Total refers to the study population listed above.

TABLE IX
SUBJECTS TAKING > 250 GRAMS OF ANALGESICS

| Age (years) | General Hospital Kuala Lumpur | | Kampong Pandan Kuala Lumpur | | Dunlop Estate S'ban/Gomali | | |
|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | Total |
| < 20 | – | – | – | 1 | 1 | 1 | 3 |
| 21 – 30 | 4 | 1 | 5 | 7 | 1 | 1 | 19 |
| 31 – 40 | 3 | 2 | 3 | 4 | 1 | 1 | 14 |
| 41 – 50 | 2 | 3 | 4 | 1 | 3 | 4 | 17 |
| 51 – 60 | 3 | 1 | 4 | 6 | 2 | 2 | 18 |
| 61 – 70 | 3 | – | – | – | 1 | – | 4 |
| > 70 | – | 1 | – | – | – | – | 1 |
| Total | 15 | 8 | 16 | 19 | 9 | 9 | 76 |

TABLE X
REASON FOR CONSUMPTION OF ANALGESIC

| Reason | General Hospital Kuala Lumpur | | Kampong Pandan Kuala Lumpur | | Dunlop Estate S'ban/Gomali | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Headache | 38 | 44.7 | 26 | 52 | 8 | 44.4 |
| Joint pain | 3 | 3.5 | 1 | 2 | 1 | 5.6 |
| Abdominal pain | 9 | 10.6 | 1 | 2 | – | – |
| Chest pain | 2 | 2.4 | – | – | – | – |
| Renal Colic | 1 | 1.2 | – | – | – | – |
| Dysmenorrhoea | 1 | 1.2 | – | – | – | – |
| Multiple pains | 9 | 10.6 | 17 | 34 | 3 | 16.7 |
| Tingling numbness in lower limbs | 1 | 1.2 | – | – | – | – |
| Giddiness | – | – | 4 | 8 | – | – |
| Cold | – | – | 1 | 2 | 6 | 33.3 |
| Unspecified | 21 | 24.6 | – | – | – | – |
| Total | 85 | 100.0 | 50 | 100 | 18 | 100.0 |

TABLE XI
SUMMARY OF SURVEY OF ANALGESIC USE

| Area | Population Surveyed | Race | No. Surveyed | % of regular users > 250 g | % of regular users > 2 kg | Reason (Headache) (%) | Type of analgesic (%) Paracetamol | APC |
|---|---|---|---|---|---|---|---|---|
| Kuala Lumpur | Hospital | All races | 500 | 4.6 | 2.0 | 44.7 | 38.0 | 12.9 |
| Kuala Lumpur | Community | Malay | 431 | 7.9 | 1.2 | 52.0 | 82.0 | 50.0 |
| Seremban/ Gomali | Community | Indian | 187 | 9.6 | 0.5 | 44.4 | 94.4 | 16.7 |

(38.8-94.4%) followed by Chap Kaki Tiga and Chap Harimau (12.9-50.0%). Although not listed separately in the table, Chap Kaki Tiga is found to be more commonly used than Chap Harimau. Both these two drugs are local proprietary compound analgesics containing aspirin, phenacetin and caffeine. As mentioned earlier the phenacetin has been replaced by acetaminophen and salicylamide respectively. These two drugs are similar to their Australian counterpart namely Bex and Vincents' powders.

The combination of aspirin and phenacetin produces a more severe renal damage than either drug alone. It was initially believed that it is phenacetin which is the major cause for renal damage, but experimental studies in rats by Nanra have shown that aspirin has a more deleterious effect than phenacetin and the combination of both potentiates the nephrotoxic effect. [9] In Australia, unlike the experience in United Kingdom or Scandinavia, withdrawal of phenacetin did not result in a decrease in the incidence of analgesic nephropathy. [10] Hence although phenacetin has been withdrawn from the two local brands in Malaysia, this does not lessen the nephrotoxicity.

The sale of compound analgesic drugs has been restricted to those with prescription in the United Kingdom and in most states in Australia. In Malaysia both these compound analgesics are freely available and it is recommended that sale should be restricted and availability be by prescription only.

Paracetamol is being increasingly used as a safer mild analgesic in many countries. This study shows paracetamol is the commonest analgesic used in Malaysia. Liver failure due to acute overdosage with paracetamol is well recognised and acute renal failure due to acute overdosage is now being increasingly recognised. [11] Two cases of analgesic nephropathy due to excessive ingestion of paracetamol have been reported. [12,13] Since January 1982, seven cases of analgesic nephropathy due to excessive ingestion of paracetamol have been documented in a combined study involving the Department of Medicine, Universiti Kebangsaan Malaysia and the Nephrology Unit, General Hospital, Kuala Lumpur. [14] Hence in view of the widescale use of paracetamol, the possibility of paracetamol-induced analgesic nephropathy need be kept in mind.

The commonest cause for consumption of analgesic is headache followed by multiple aches and pain including arthritis. It is recommended that the renal function be assessed regularly in the above categories of patients who consume analgesics regularly.

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