

# INCIDENCE OF DOWN'S SYNDROME IN A LARGE MALAYSIAN MATERNITY HOSPITAL OVER AN 18 MONTH PERIOD

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## ABSTRACT

Over an 18 month period, 34,522 livebirths were delivered in the Maternity Hospital, Kuala Lumpur. 36 of them had Down's Syndrome. Based on our findings, the incidence of Down's syndrome among the Malaysian babies born in this hospital was 1:959 livebirths. According to racial distributions, the incidence among Malay was 1:981 livebirths, Chinese 1:940 livebirths, and Indian 1:860 livebirths. Our incidence was lower than those from the Western populations. Unlike others' studies, there was also a female preponderance of Down's syndrome among the Malaysian babies.

**Key Words:** Babies with Down's Syndrome, Malaysian

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## INTRODUCTION

Down's syndrome is the most common type of congenital malformation and mental retardation in man. Various studies done in the west showed that the average incidence of this condition was between 1:555 to 1:850 livebirths(1,2,3,4). In Malaysia, other than data on institutionalised children(5), and a study done by Stevenson et al(6), there are no data on the exact incidence of Down's syndrome among the population. In the study by Stevenson et al, only three cases of Down's syndrome were detected in 10,000 consecutive births in the Kuala Lumpur Maternity Hospital in the 1966 report. The data obtained in that report showed that the incidence of Down's syndrome was very low in both Kuala Lumpur and Hong Kong compared with 22 other centers in the world. As the exact methodology was not clearly stated, it was not sure whether there was any possibility of underdiagnosis. In the study by Noor et al(5) on 124 institutionalised children in Kuala Lumpur, however, Down's syndrome accounted for 32.3% of the mentally retarded school children. Because of these discrepancies, we decided to carry out a prospective study to determine the incidence of Down's

syndrome among the Malaysian liveborns delivered at the Maternity Hospital, Kuala Lumpur.

## METHODOLOGY

The study was conducted over an 18 month period, between 1st of July, 1986 and 31st of December, 1987 at the Maternity Hospital, Kuala Lumpur. During this period, any liveborn babies who were found to have features of Down's syndrome or dysmorphism during routine screening examination before discharge home were referred to one of us (TSH or NYB).

The maternal, family and obstetric history were noted. A complete physical examination was carried out on all these babies. A specimen of blood was collected from those babies diagnosed to have Down's Syndrome for chromosomal study. If the chromosome analysis was inconclusive, the test was repeated as soon as possible. All liveborn babies with obvious clinical signs of Down's syndrome, whether or not proven by chromosomal analysis, were included in the study.

## RESULTS

A total of 36 liveborn babies with Down's syndrome were delivered at the Maternity Hospital, Kuala Lumpur during the study period. Clinically, all of them had features of Down's syndrome. 32 of them had chromosomal analysis done. 26 (72.2%) were confirmed to have Trisomy 21(47, XX or XY). Chromosome study had to be repeated on 4 of these 26 babies before the diagnosis was confirmed. Specimens of blood could not be collected from 4 patients for chromosome analysis because 2 of them died during the early neonatal period while 2 were taken home by their mothers within 24 hours after birth and defaulted from follow-up. 6 patients had inconclusive results in their chromosome analysis due to cell lines dying out during culture or inadequate number of cells counted. Repeated chromosome study, however, could not be done because these infants did not return for follow-up.

The racial and sex distribution is shown in Table 1. There was a greater proportion of females in this group of babies.

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**Table 1.**  
**Race and Sex distribution of Liveborn Neonates with Down's Syndrome delivered at the Maternity Hospital, Kuala Lumpur, (July 1986 – December 1987)**

	Total No. of Babies with Down's Syndrome	Sex		Male : Female
		Male	Female	
Malay	22	11	11	1 : 1
Chinese	8	3	5	3 : 5
Indian	6	0	6	0 : 6
Others	0	0	0	—
Total	36	14	22	7 : 11

During this 18 month period, there was a total of 34,522 livebirths delivered at this Hospital. The incidence of Down's syndrome in this hospital was thus 1.034 per 1000 livebirths or 1:959 livebirths (Table 2). The Indians had a slightly higher incidence of Down's syndrome than the

**Table 2.**  
**The frequently distribution and Incidence of Down's Syndrome according to Racial origins at the Maternity Hospital, Kuala Lumpur, (July 1986 – December 1987)**

Race	No. of babies with Down's Syndrome	No. of Livebirths	Incidence of Down's Syndrome per 1000 livebirths	Ratio of Occurrence
Malay	22	21,574	1.019	1:981
Chinese	8	7,522	1.064	1:940
Indians	6	5,160	1.163	1:860
Others	0	266	—	—
Total	36	34,522	1.043	1:959

Malays or the Chinese. However, the differences in incidence among the three racial groups were not statistically significant ( $p > 0.05$ ).

## DISCUSSION

Similar to the report from Hong Kong(7), our study showed that the incidence of Down's syndrome at the Kuala Lumpur Maternity Hospital was lower than those from the Western studies(1,2,3,4) as was reported by Stevenson et al in 1966(6) although the incidence obtained by us was higher than that reported in 1966. One of the possibilities that had been put forward to explain the lower incidence among Asian population was the low sensitivity for detecting Down's syndrome in Asian newborns due to the difficulty in recognising the phenotypic appearance(8). This was because data from Singapore(9) and the more recent Japanese studies(10) showed that their incidence rates were closer to those from the West. However, the review

by Gosh et al(7) on the incidence of Down's syndrome in Hong Kong Chinese over a 19-year period showed that significant under-diagnosis was unlikely. Furthermore, those of us who work in the Asian countries do not find difficulty in identifying clinical features of Down's syndrome as was alleged. The other possible explanation for the lower incidence of Down's syndrome among the non-Caucasian population could be due to the fact that a greater proportion of babies were born to the younger Asian mothers. Table 3, however, shows that the Western population on whom some of the studies were done had, in fact, a lower proportion of older mothers than the non-Caucasian populations. Thus we find that despite the Asian population having a greater proportion of mothers above the age of 35 years, the incidence of Down's syndrome was still lower than those among the Western populations. The difference in incidence could possibly be due to the influence of race since it was noted that the incidence of Down's syndrome in the three racial groups among our Malaysian babies was different, the Malay and Chinese had similar incidence (1:981 and 1:940 livebirths respectively) while the Indians had a higher incidence (1:860 livebirths) although the differences were not statistically significant.

Our study showed a greater proportion of female babies over the males, the proportion of the males being 0.39. In the study by Linsten et al(2), the proportion of male babies with Down's syndrome was 0.56. Whereas in our Malaysian babies, even among the different races, there were more female Down's syndrome. It is true that our series of 36 babies was small compared with Lindsten's series of 1368 babies with Down's syndrome collected over a period of 10 years. However, using the Chi-square test, we found that our figure of more females was significant ( $\chi^2 = 8.92, p < 0.01$ ). This is interesting as several other authors also reported a male preponderance in Down's syndrome(4,7). One hypothesis put forward by Lindsten et al(2) on the finding of more males among children with Down's syndrome was the delayed fertilization of the ovum by a Y sperm in population which tried to practice contraception through delayed intercourse after ovulation. As our study showed more females than males, we are not sure why this is so. Further study is required to determine this.

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**Table 3.**  
**Frequency distribution of livebirths according to maternal age in Sewden (3), Wales (1), Hong Kong (7) and Maternity Hospital, Kuala Lumpur where studies of Down's syndrome were carried.**

Maternal age in years	Sweden		Wales		Hong Kong		Kuala Lumpur	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
<20	30,325	( 9.2)	6,419	( 13.9)	7,515	( 6.5)	1,773	( 5.1)
20 – 24	117,593	( 35.5)	15,960	( 34.7)	34,575	( 29.8)	8,956	( 25.9)
25 – 29	108,746	( 32.9)	14,069	( 30.6)	38,613	( 33.3)	12,190	( 35.3)
30 – 34	49,487	( 14.9)	6,416	( 13.9)	21,461	( 18.5)	7,517	( 21.8)
35 – 39	19,522	( 5.9)	2,549	( 5.5)	10,101	( 8.7)	3,414	( 9.9)
40 – 44	4,880	( 1.5)	597	( 1.3)	3,329	( 2.9)	616	( 1.8)
45 – 49	306	( 0.1)	46	( 0.1)	349	( 0.3)	56	( 0.2)
Total	330,859	(100 )	46,046	(100 )	115,943	(100 )	34,522	(100 )
<35	306,151	( 92.5)	42,854	( 93.1)	102,164	( 88.1)	30,436	( 88.2)
≥35	24,708	( 7.5)	3,192	( 6.9)	13,779	( 11.9)	4,086	( 11.8)

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