

Suicide in Singapore: A Changing Sex Ratio over the Last Decade

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ABSTRACT

Aim of study: To examine for any change in the sex ratio of suicides in Singapore over the last decade.

Methods: Data on suicides in Singapore for the decade 1989-98 were examined, both as an overall set and as four age-based sub-groups.

Results: The male to female ratio increased significantly over the decade, contributed to most distinctly by changed rates in young adults (ie a group defined as 29 - 40 years). The changed sex ratio appeared limited to Chinese subjects, where the suicide rate/100,000 population was consistently higher than for the non-Chinese. The changed ratio appeared more to reflect an absolute decrease in female suicides rather than any distinct absolute increase in male suicides.

Conclusions: The previous distinct male preponderance in suicide, which had progressively diminished by the early eighties, has become distinct again, but is now seemingly more driven by a disproportionate decline in the absolute rate of suicides in younger females. We speculate on possible social determinants of this intriguing epidemiological trend.

Keywords: suicide, Singapore, sex ratio

Singapore Med J 2001 Vol 42(1):011-014

"...two asian countries, Singapore and Japan, are the only countries in the world in which the relative mortality by suicide is higher for females than for males among 15-24 year olds. In Singapore, this is also true for the 25-34 age group" - Diekstra, 1989¹.

INTRODUCTION

Studies of suicide and attempted suicide have long dominated psychiatric epidemiology, as Durkheim's thesis⁽²⁾ underpins our awareness that suicide rates are efficient markers of social cohesion. Both changes in rates and their point of impact can be of importance, not only intrinsically and also by directing attention to possible determinants amenable to intervention.

Numerous studies have been undertaken of suicide in Singapore, with representative books, chapters and reports examining determinants⁽³⁻⁷⁾, while others have examined stability in rates and the impact of macro-societal variables^(8,9). Hassan⁽⁶⁾ published five-yearly rates from 1900-1974, revealing a clear peak rate of 16.3/100,000 in 1940-44 (and reflecting the Second World War), but without any overall directional trend, and thus allowing a finer focus on the last two decades.

In the 80s, the overall suicide rate in Singapore was mid-range when international comparisons were made, with La Vecchia et al⁽¹⁰⁾ reporting on data from 57 countries, and providing rates of 15.3/100,000 for Singapore males and 10.6/100,000 for Singapore females. The rank order – of twenty-seventh and fifth for males and females respectively – as well as the relatively narrow difference between rates, are unusual, in that a male excess in suicide is generally distinct in most countries. This may not have been a long-standing phenomenon, as plotted data in that paper indicate that suicide rates in Singapore were some three times higher for males than for females in the early sixties. Over the next twenty years, there was a linear decline in male rates, while female rates remained relatively steady, so creating the near to parity rates for the two sexes. That unusual phenomenon also appears contributed to by disproportionately high rates in young females. Diekstra⁽¹⁾ reported on international suicide trends from the 60s to the 80s, with that data set revealing evidence of a reversal of the classic male preponderance in a sub-set of the Singapore 80s data, in that there was a female excess evident in both the 15-24 and the 25-34 year age groups.

Chia⁽⁵⁾ undertook a focussed analysis over the period 1969-76, with rates in those age groups being influenced by a number of factors, including race. Thus, while there was an overall male preponderance in suicide (and for each of the overall Chinese, Indian and Malay sub-samples), for those aged 15-19 years, there was a female excess in the Chinese subjects only. For those aged 20-29 years (and where, overall, there was a female excess in suicides), the Indians showed a distinct male preponderance, the Chinese a slight female

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Table I. Yearly suicides (raw and rate/100,000) in Singapore for the period 1989-98, examined by sex and across four age-groups.

Sex and age group	Year									
	89	90	91	92	93	94	95	96	97	98
<25 years										
Males	34	33	25	25	20	27	29	24	23	32
Females	35	18	20	14	21	24	25	19	19	23
25-39 years										
Males	67	69	70	70	56	68	77	58	82	71
Females	52	56	44	50	35	43	40	32	47	38
40-59 years										
Males	55	49	44	35	54	58	71	42	64	66
Females	30	34	23	21	27	27	44	15	27	36
>60 years										
Males	59	50	51	38	48	53	67	43	54	52
Females	62	45	42	45	35	46	47	38	30	53
Total										
Males	215	201	190	168	178	206	244	167	223	221
Females	179	153	129	130	118	140	156	104	123	150
Total	394	354	319	298	296	346	400	271	346	371
Rate/100,000	14.7	13.1	10.7	9.8	9.4	10.8	12.2	7.9	9.8	10.4
M F ratio	1.20	1.31	1.48	1.29	1.51	1.55	1.56	1.61	1.82	1.47

preponderance, and the Malays showed a male preponderance. Hassan⁽⁶⁾ argued for differential social determinants in Singapore for males and females in differing age groups. Thus, for those aged less than 24 years, family problems presented the main risk and mental illness the next risk factor for females, while mental illness and 'failure in life' were the two principal factors for males.

Thus, in the 70s and 80s Singapore showed, in comparison to other countries, a narrow overall male preponderance in suicide rates, contributed to in part by a female preponderance in young females. Here we examine the sex ratio in suicide rates in Singapore for the subsequent decade.

MATERIALS AND METHODS

Data on suicide in Singapore were provided for consecutive years over the decade 1989-98 by the Singapore Immigration and Registration department. Annual rates were calculated by deriving annual general population rates from the Annual Report on Registration of Births and Deaths (Singapore Registry of Births and Deaths).

RESULTS

Table I examines the raw numbers and rates of suicides/100,000 of the population in each individual year. In addition, we examine for any influence of sex, both for the whole group and for representative age-based sub-groups. Inspection reveals wide variation in the raw annual suicide rate across the decade (ranging from 400 in 1995 to 271 in 1996, adjoining years), and in rates/

100,000 of the population, but reveal no clear trend for any change in the total suicide rate over time (see above).

In the whole group, there is the suggestion of a relatively linear increase in the male:female sex ratio, at least from 1989 (M:F = 1.20) to 1997 (M:F = 1.82). Analysis of the whole period (ie 1989-98) identified a clearly significant linear increase ($r = 0.78$, $P < 0.01$). When examined for individual age sub-groups, it was not significant for those older than 60 years ($r = 0.41$, $P = 0.24$), those 40-59 years ($r = 0.50$, $p = 0.14$) or for those less than 25 years ($r = 0.13$, $P = 0.71$), but highly significant for those aged 25-39 years ($r = 0.88$, $P < 0.001$).

As the majority of those committing suicide were Chinese (ie 85%), we repeated the analyses on a limited data set of Chinese subjects only. Table II provides relevant data for the Chinese and residual non-Chinese sub-sets. The suicide rate/100,000 was consistently higher (some two to three times) that for the residual subjects over the decade. The sex ratio in residual non-Chinese subjects ranged widely over each year of the decade with no clear trend for an increase or decrease in the sex ratio; as numbers in this sub-set were small, we did not undertake any formal analyses. Our principal analyses were repeated for the Chinese sub-set. Here there was a linear increase in the male:female ratio ($r = 0.79$, $P < 0.001$), and in age sub-sets, most marked in those aged 25-39 ($r = 0.73$, $P = 0.02$), less evident - when coefficients were considered - in those older than 60 years ($r = 0.54$, $P = 0.11$) and those aged 40-59 years ($r = 0.51$, $P = 0.13$), but not suggested at all for those aged less than 25 years ($r = 0.20$, $P = 0.58$).

Table 11. Yearly suicides (raw and rate/100,000) among Chinese in Singapore for the period 1989-98, examined by sex and across four age groups, together with overall suicide rate and sex ratio for non-Chinese subjects by year.

Sex and age group for Chinese subjects	Year									
	89	90	91	92	93	94	95	96	97	98
<25 years										
Males	24	27	18	20	16	24	25	17	17	28
Females	22	11	14	11	13	18	21	8	13	12
25-39 year										
Males	57	61	56	62	41	51	59	45	64	55
Females	45	45	32	42	27	32	32	22	38	31
40-59 year										
Males	43	44	38	31	50	49	55	34	59	57
Females	27	32	23	18	26	26	40	14	25	35
> 60 years										
Males	56	44	46	33	44	47	63	42	50	51
Females	61	44	41	43	35	45	46	37	29	49
Total										
Males	180	176	157	146	151	171	202	138	190	191
Females	155	132	110	114	101	121	139	81	105	127
Total	334	308	267	260	252	292	341	219	295	318
Rate/100,000	16.2	14.6	12.4	11.9	11.3	12.9	14.8	9.3	12.3	13.1
M:F ratio	1.16	1.33	1.43	1.28	1.50	1.41	1.45	1.70	1.81	1.50
Non-Chinese										
subjects										
Rate/100,000	9.7	7.7	6.2	4.5	4.8	5.8	6.1	4.8	4.5	4.7
Males	35	25	33	22	27	35	42	29	33	30
Females	24	21	19	16	17	19	17	23	18	23
M:F ratio	1.46	1.19	1.73	1.37	1.59	1.84	2.48	1.26	1.83	1.30

DISCUSSION

While a decade would appear a considerable period, trends in suicide data are best interpreted over more extensive periods. As noted, the absolute male rate is distinctly higher than the female rate in most countries of the world, and as it was in Singapore in the early eighties. Our data show, however, that in Singapore in 1989, the male rate was only twenty percent higher than the female rate. Since then, the sex ratio has changed linearly and distinctly, and appears to be returning to the higher levels evident in the sixties. The changed sex ratio cannot be simply interpreted from the raw data as either due to a disproportionate increase in male suicides and/or a disproportionate decrease in female suicides, as the considerable variation across individual years obscures ready conclusions. Analyses suggest that the change is either limited to or most evident in Chinese subjects. We have identified that the biggest 'driver' to the overall group phenomenon emerges from the 25-39 age group (and confirmed in the Chinese sub-set). While the determinants of the changing sex ratio in this group are not distinct, the change appears due more to the absolute female rate dropping rather than the absolute male suicide rate rising. This is at variance with the change from the

sixties to the eighties, when only the male rate showed a distinct decrease.

The current phenomenon of a differential decrease in female rates (seemingly driven by a disproportionate reduction in the rate in young adult females) is of key interest, and invites speculation. Previously, Singapore was distinguished (in comparative terms from other countries) by a female preponderance in that age group. It is likely that such a change reflects improvements in the socio-economic status of women in Singapore over the last two decades. Educational discrepancies across the sexes have been addressed, while younger women are more likely to be financially independent and aware of their rights under the Women's Charter, less likely to view divorce as stigmatizing and thus less likely to remain in a dysfunctional marriage. Such hypotheses are capable of formal testing and pursuit. In the interval, the epidemiological data intrigue and invite close consideration.

ACKNOWLEDGMENT

We are grateful to Ms Hoi Wai Lan, Assistant Head, Database, Singapore Immigration and Registration, for providing the data, and to Jennifer Loh and Kay Roy for assistance with manuscript preparation.

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