

INVITED ARTICLE

SELF-MEDICATION IN SINGAPORE

S R Quah

SYNOPSIS

Two studies on self-medication provide the basis for analysis. The data indicate that self-medication is a normal activity among the non-clinical population in Singapore, and that the tendency to practise self-medication increases with the person's level of education. The findings refute the assumptions that (a) self-medication is practised by a minority of people, and (b) that such minority is either illiterate, ignorant or misinformed. Other factors associated with self-medication are discussed.

INTRODUCTION

The main purpose of this paper is to focus on two aspects of self-medication in Singapore that are often overlooked despite their important role with regard to health care in the population. First, self-medication is a common, normal activity among the population. Second and more importantly, the tendency towards self-medication does not diminish but, on the contrary, increases as the person's level of education increases. Both trends refute the assumption held by some people that self-medication is a deviant practice among an ignorant minority in the population.

Department of Sociology
National University of Singapore

S R Quah, PhD
Lecturer

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I first detected these two features of self-medication in Singapore through a study conducted in 1974 (1). The population analysed then was a representative sample of residents in public housing flats. I will be reporting in this paper relevant findings from a second, larger study of a representative sample of the total population of Singapore citizens, completed in 1979. The second study confirms the two main features of self-medication found by the first investigation. Hence the second objective of this paper is to provide further evidence for the widespread practice of self-medication and its clear link to the person's level of education.

Before presenting the relevant details, I must clarify what is meant by "self-medication" in this discussion. The term refers to the practice of keeping and/or using medicines without a physician's prescription or advice. Consequently, I will be referring almost exclusively to over-the counter (OTC) medicines although it is not unusual to find people who keep "left-overs" of physicians' prescriptions at home for future occurrences of what they may see as "the same" or "very similar" symptoms to those formerly treated by the doctor who wrote the prescription.

It is necessary to describe briefly at this juncture a few key aspects of the procedure used in the second study which generated the data to be presented here. This study was conducted from 1977 to 1979. It consisted of personal interviews with a representative sample (1,271 individuals) of the total population of Singapore citizens, that is, male and female adults 21 years old or older. Each interview took place at the home of the interviewee in his/her own language or dialect, and was conducted by one interviewer of his/her

same gender and ethnicity. A team of 21 interviewers was especially trained for this job. Each interview lasted, on average, fifty minutes. Although this study covers many other aspects of health and concentrates on preventive health behaviour, the data reported here refer exclusively to the aspect of self-medication.

I will discuss the findings of the second study in two parts. Firstly, I will address the question of how common self-medication is by describing the relevant characteristics of people who are more likely to practise it. Secondly, I will explain why educated people manifest a stronger tendency towards self-medication.

WHO PRACTISES SELF-MEDICATION?

Practically one out of every two persons practises self-medication as defined in this study. Indeed, fifty-one percent of the sample indicated that they usually buy and keep at home medicines that do not need a doctor's prescription. Three key characteristics of the people involved are: (a) their ethnicity, as one may wonder whether cultural values particular to a given ethnic community in Singapore play an important role in either impeding or stimulating self-medication; (b) their social class, considering the prevailing belief in some circles that it might be the lower class person who is more inclined to self-medicate out of ignorance or because he/she cannot afford a visit to the doctor; and (c) their gender, to begin comparing the health practices of men and women. Table 1 provides the corresponding figures.

TABLE 1. MAIN CHARACTERISTICS OF PEOPLE WHO PRACTISE SELF-MEDICATION (%)

Characteristic	Practise Self-medication			(N)*	Correlation
	YES	NO	TOTAL		
ETHNICITY					
Chinese	50.0	50.0	100	(963)	Chi-square = 9.36 p = .009
Malay	62.0	38.0	100	(167)	
Indian	52.0	48.0	100	(122)	
SOCIAL CLASS					
Lower	45.0	55.0	100	(482)	Chi-square = 19.14 p = .0002
Middle	55.0	45.0	100	(611)	
Upper	63.0	37.0	100	(159)	
GENDER					
Male	42.0	58.0	100	(580)	Chi-square = 39.55 p = .00001
Female	59.0	41.0	100	(690)	

*The figures exclude non-response cases.

The general picture presented in Tables 1 indicates that self-medication is popular among all ethnic groups and social classes as well as among men and women. Yet, there are some significant differences across ethnic, social and gender lines. In terms of ethnicity, Malays are more inclined than Chinese or Indians to keep medicines at home. The difference among the three ethnic groups is nevertheless small. A sharper contrast exists among the upper, middle and lower social classes: the inclination towards self-medication increases with social class. Another significant difference is also found between males and females. Females are more likely to report keeping medicines at home than males.

Not forgetting that self-medication is a very common activity, the overall message in Table 1 is that lower class men are the least likely to practise self-medication while upper class females are the most likely to do so. Does the difference between males and females persist in all three ethnic groups? Yes. Women, whatever their ethnic background, are more likely than men to buy and keep medicines at home (Table 2). This is not surprising: mothers, wives and grandmothers do take upon themselves the task of looking after the health of their family members in a manner that is both consistent and expected by their families. It is the outcome of an spontaneous "division of duties" among men and women around the home found in many cultures (2,3). On the other hand, it can be observed (Table 2) that Malay and Indian females manifest a stronger inclination towards this practice compared to Chinese females.

Is this stronger inclination of women towards self-medication found in all social classes? The answer is yes, again. The female concern with the health of family members is reflected in the consistently higher proportion of women, compared to men in all three social classes, who buy and keep medicines at home. But these proportions increase as the social class increases: 53 per cent of women in the lower class, 64 per cent of women in the middle class, and 77 per cent of women in the upper class (Table 3). This brings us to the second part of the discussion, that is, the influence of education.

THE INFLUENCE OF EDUCATION.

As indicated in the earlier study, education is a relevant factor in the analysis of self-medication not only because it plays an important part in the decision-making process regarding whether to self-medicate and what medicines to take, but also because its effect is found to be the opposite of what many professionals think it is. More specifically, many health professionals still believe today that self-medication is the result of ignorance of either the legitimate thing to do-to consult a doctor-or ignorance of the possible side-effects of the medicine taken. It is then important in this discussion to elaborate on the role of education and corroborate, with the help of further evidence that, far from being the outcome of ignorance, self-medication seems to be the expression of self-reliance and is more common among people with higher levels of education.

Let me deal with some background details first. Social class has been measured in this study as the combination of one's monthly income level, the prestige of his/her occupation, and the highest level of formal education attained. All these three aspects are very closely inter-related as might be expected. A person with a high level of education more often than not holds a high prestige occupation and thus earns a higher than average income. It has been shown above how self-medication increases with social class. Now, of the three aspects of social class, the person's level of formal education is the most accurate as it can be measured more objectively than the other two. More importantly, it is education which reveals the strongest correlation with self-medication.

Now, my argument is that education influences self-medication not only directly but also through other factors such as the amount of information or knowledge a person has on disease etiology and prognosis; certain personality traits such as future-orientation; and his level of exposure to mass media. The relevant data are presented in Table 4, and I will deal with each of these points separately.

Firstly, the person's educational level is positively associated with self-medication. While only 45 per cent of

TABLE 2. ETHNICITY, GENDER AND SELF-MEDICATION (%)

Ethnicity & Gender	Practise self-medication			(N)*	Correlation
	NO	YES	TOTAL		
CHINESE					
Male	59.0	41.0	100	(418)	Chi-square = 20.89
Female	44.0	56.0	100	(544)	p = .0001
MALAY					
Male	51.0	49.0	100	(95)	Chi-square = 15.43
Female	21.0	79.0	100	(72)	p = .0003
INDIAN					
Male	67.0	33.0	100	(63)	Chi-square = 26.54
Female	20.0	80.0	100	(59)	p = .00001

TABLE 3. SOCIAL CLASS, GENDER AND SELF-MEDICATION (%)

Social Class and Gender	Practise self-medication			(N)*	Correlation
	NO	YES	TOTAL		
LOWER CLASS					
Male	65.0	35.0	100	(208)	Chi-square = 15.42 p = .0003
Female	47.0	53.0	100	(276)	
MIDDLE CLASS					
Male	57.0	43.0	100	(275)	Chi-square = 28.35 p = .00001
Female	36.0	64.0	100	(335)	
UPPER CLASS					
Male	45.0	55.0	100	(93)	Chi-square = 7.81 p = .0055
Female	23.0	77.0	100	(64)	

*Figures exclude non-response cases

the sample with no formal education practise self-medication, this proportion increases to 46 per cent among people with one to six years of schooling; 59 per cent of those with seven to twelve years of education, and 62 per cent of people with thirteen or more years of formal education. It is interesting to note also that people with higher education are more likely to use modern medicines for self-medication. Eighty-one per cent of those with thirteen years or more of education use modern medicines while only eighteen per cent of them use traditional medicines. In contrast, the proportions using modern and traditional medicines among the uneducated are forty and sixty per cent respectively.

Secondly, in order to ascertain their level of knowledge or information on disease, the people analysed in this study were asked questions on the definition, etiology and prognosis of three diseases i.e., cancer, heart disease and tuberculosis. A combined index of disease knowledge was then constructed based on the answers obtained from each individual. The scores of this index range from low to high depending on the level of accuracy of the answers.

As expected, there is a positive association between knowledge on disease and level of education (Table 4): the higher the person's level of formal education, the more likely is he/she to have accurate information on the definition of the three diseases mentioned, their etiology and their prognosis. Of more direct interest here is the fact that knowledge on disease is also positively related to self-medication. The data in Table 5 illustrate this association. The higher one's level of knowledge on disease, the more inclined this person is to practice self-medication and the more likely he/she is to use modern medicines.

There seems to be a mutual effect between these two factors. People who are highly educated are exposed to a wider scope of written information on health matters by virtue of their access to information sources not reached or sought by less educated groups. Once some information is obtained on a health subject of interest, the educated person is usually inclined to search for more. Educated people tend to be more inquisitive; they seek information not only from the relevant

literature but also from their own doctors, whenever possible. With the wealth of health literature available to the lay public and the great variety of OTCs in the market, it is not at all surprising that educated people put their knowledge at work and use their own judgment in self-medication. As it may be observed in Table 4, exposure to mass media-another source of information on medicines-is also directly associated with level of education.

The third and final point I want to discuss is that education influences self-medication through some personality characteristics such as future-orientation and openness to innovation. People with higher education are more likely to be future-oriented than people with no or low levels of formal education (Table 4). A person is said to be future-oriented if he/she believes that it is possible and desirable to prevent and plan ahead with the purpose of meeting life events instead of simply reacting to them. Openness to innovation is manifested by a person who believes that it is possible and desirable to improve the methods by which things are accomplished. Both personality traits are related; a future-oriented person is also more likely to manifest openness to innovation. And educated people are more prone to have such traits than people with lower or no education.

It has been found in this study that both personality traits are influential in self-medication. The person who practises self-medication is typically future-oriented and open to innovation. In the earlier study I tentatively explained the high rate of self-medication among the educated population as the result of their self-reliance and autonomy regarding health matters. The reported data on personality traits from the second study allow me to confirm and expand on that assumption. The inclination to prevent and meet eventualities helps to explain why educated people keep medicines at home. Similarly, being open to innovation is a trait that motivates educated people to take the initiative to buy modern OTC medicines when, in their own judgement, the problem at hand is not serious; instead of following the conservative path of either consulting a physician or taking traditional remedies.

**TABLE 4. EDUCATION AND ITS INFLUENCE ON SELF-MEDICATION
AND OTHER RELEVANT FACTORS (%)**

	Years of Formal Education			
	No formal education	1 – 6 years	7 – 12 years	13 yrs or more
Practise Self-medication (a)				
No	55.0	54.0	40.9	37.9
Yes	45.0	46.0	59.1	62.1
Total	100.0	100.0	100.0	100.0
(N)*	(297)	(441)	(467)	(66)
Type of medicine used (b)				
Modern	40.4	66.2	76.8	81.4
Traditional	59.6	33.8	23.2	18.6
Total	100.0	100.0	100.0	100.0
(N)*	(136)	(202)	(275)	(39)
Knowledge on disease (c)				
Low	17.0	9.0	3.0	1.0
*	44.0	45.0	26.0	11.0
*	35.0	39.0	54.0	71.0
High	4.0	7.0	17.0	17.0
Total	100.0	100.0	100.0	100.0
(N)*	(293)	(436)	(463)	(66)
Future orientation (d)				
Low	46.0	27.0	18.0	11.0
High	54.0	73.0	82.0	89.0
Total	100.0	100.0	100.0	100.0
(N)*	(296)	(441)	(467)	(65)
Exposure to mass media (e)				
Low	66.0	22.0	5.0	5.0
High	34.0	78.0	95.0	95.0
Total	100.0	100.0	100.0	100.0
(N)*	(295)	(441)	(467)	(66)

* Figures exclude non-response cases

Correlations: (a) Chi-square = 24.79; p = .00001
 (b) Chi-square = 60.29; p = .00001
 (c) Chi-square = 161.19; p = .00001
 (d) Chi-square = 80.76; p = .00001
 (e) Chi-square = 103.68; p = .00001

TABLE 5. SELF-MEDICATION AND KNOWLEDGE ON DISEASE (%)

Practise self-medication	Knowledge of disease				Correlation
	Low	*....	*....	High	
YES	28.0	40.0	62.0	69.0	Chi-square = 90.18 p = .007
NO	72.0	60.0	38.0	31.0	
TOTAL (N)*	100.0 (106)	100.0 (452)	100.0 (566)	100.0 (138)	
Type of medicine used					
MODERN	53.0	59.0	68.0	77.0	Chi-square = 12.06 p = .007
TRADITIONAL	47.0	41.0	32.0	23.0	
TOTAL (N)*	100.0 (30)	100.0 (181)	100.0 (358)	100.0 (94)	

*Figure exclude non-response cases

CONCLUSION

I have presented in this discussion further evidence verifying two key premises stated in an earlier study. Self-medication is not only a common practice among the normal population, but is also more prevalent among the higher educated population. In my opinion, these data refute the common belief that the practice of self-medication is rare and that it is a manifestation of ignorance. In addition to these main points, the second study has shed more light on the reasons why education is such an important factor in explaining self-medication.

The preceding pages have dealt exclusively with empirical data from Singapore. Before I conclude, however, I want to mention briefly two other aspects of the Singapore situation which can contribute to our understanding of self-medication. These aspects are: (a) the fact that the Singapore trend is not unique but also common in industrialised countries; and (b) the need to provide more information on medicines, both prescribed and OTCs, to a public that is already motivated to seek such information and use it to attain and maintain a good state of health.

There are several indications of the similarity between Singapore and most industrialised countries in terms of the popularity of self-medication. On the one hand, the historical prevalence of self-medication in the United States and Europe is well documented (4,5,6). On the other hand, three further indicators of the popularity of self-medication are the increasing volume of sales of OTCs (7,8); the wide range of medicines offered in the market (9); and the numerous publications on self-medication and health care addressed to the lay public (9,10,11,12,13,14,15,16,17). Many of these publications are available in Singapore bookstores.

The second aspect is that the public, particularly the educated consumer, is already motivated to seek information on medicines on health care in general. Our population is not yet as active as the consumer groups in the United States but it is heading in that direction. In the United States, consumer groups have lobbied successfully in several instances to obtain the information they need to make educated judgments on matters affecting their health. One

example of this movement is, as you may know, the Patient Package Insert to accompany medication dispensed at pharmacies (18).

In Singapore we are already witnessing increasing consumers' dissatisfaction with the lack of information available to them regarding prescription medicines. The issue of labelling represents such a dissatisfaction. Considering the data and arguments presented in the preceding two sections of this paper, the consumers' request for detailed labels on prescription medicines is a rather logical one. Most consumers, but particularly educated consumers, feel the need to know what substances they are given, the possible side effects, and the reasons behind the procedures instructed by the doctor or pharmacist. Educated consumers, one must not forget, are likely to be future-oriented, concerned with prevention and open to innovative ideas. When prescription medicines are fully labelled and when the consumer is informed on possible side-effects, expiry date and precise limitations of the medicine, he/she is then equipped to take an informed decision on whether or not to comply with the full period of the prescription and what to do with the "left-overs" if any. Far from being harmful, objective information will prevent the person from using such left-overs for self-medication later on, or from misusing the medicine at all. In this connection, the recent encouragement by the government to private physicians to label their prescriptions fully is commendable.

This paper has presented a summary of selected findings on self-medication and thus many other aspects of the problem have been omitted for the sake of brevity. I am fully aware of the complexity of the issue of self-medication and this discussion is only intended to stimulate more empirical research on the subject by all professionals concerned with the public's health in Singapore.

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