

**Changes in hormone therapy prescriptions among middle-aged women
in Taiwan:
Implications for health needs at menopause**

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Statement:

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Abstract

Background:

From the 1990s until 2002, hormone therapy (HT) was a popular treatment for menopausal syndrome in middle-aged women. Since the Women's Health Initiatives (WHI) studies in 2002 warned that the risk of HT might exceed its benefits, there has been a reduction in its use worldwide, including in Taiwan. Many studies reported this decline, but few discussed whether HT may or may not fulfill menopausal women's health needs. This study examines the changes in HT prescriptions and other measures by menopausal women in Taiwan and the implications of these changes in relation to their needs.

Methods:

This study analyses annual and monthly rates of HT prescription and outpatient care utilization among Taiwanese women in the 45-64 age group. It is based on medical claims data of the Taiwan National Health Insurance Programs 2000-2004.

Results:

The data showed that HT was the prevailing treatment for menopausal syndrome before the WHI publications. The rate of HT prescription increased yearly, peaking in 2001 at 21.6% but declined from 2002 to 9.7% in 2004. At the same time, the number of Taiwanese women seeking traditional Chinese medicine for menopausal syndrome increased.

Conclusion:

HT prescriptions in Taiwan declined significantly following the WHI reports,

demonstrating the elasticity of the need for HT. But utilization data in Taiwan showed that attendance at outpatient clinics at menopause remained constant and the use of traditional Chinese medicine increased. Further studies should investigate health needs from menopausal women's perspectives in order to develop appropriate measures to meet their needs.

Key words:

Menopause, hormone therapy, women's health needs, Taiwan

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in Taiwan:

Implications for health needs at menopause

Hormone therapy (HT), also known as hormone replacement therapy, has been the subject of continuing controversy regarding its safety (Birkhaeuser, 2005; Santoro et al., 1999; The Women's Health Initiative Study Group, 1998). This debate has been polarized between those who perceive menopause as a natural part of the ageing process for women and those who regard menopause as an endocrine deficiency disease (Bell, 1987; Coupland & Williams, 2002; Harvard Medical School, 1997; Meyer, 2001). However, despite varying symptoms relating to body transitions experienced by menopausal women living in different socio-cultural circumstances (Ballard, Elston, & Gabe, 2009; Harris, 2008), HT became the prevailing treatment prescribed by Western medicine to menopausal women. Few studies have assessed menopausal health needs from the perspectives of women themselves (Green, Thompson, & Griffiths, 2002; Im, 2006). Even fewer have investigated whether the health care provided meets menopausal women's health needs.

HT has been a popular treatment for menopausal syndrome since the mid-1990s (Naughton et al., 2005). However, reports on its risks from the two phases of the

Women's Health Initiative (WHI) studies sparked a huge drop in the use of HT worldwide (Guay et al., 2007; Hersh, Stefanick, & Stafford, 2004; Naughton et al., 2005). This paper examines the changes in HT use, based on prescription data, for menopausal syndrome in Taiwan and analyzes the implications of these changes for middle-aged women seeking to meet their menopausal health needs.

The findings of this paper highlight three points that should add another dimension to the current debate about menopausal health provisions: 1) HT use is no longer prevalent among middle-aged women in Taiwan as an essential treatment to meet these women's health needs, 2) menopausal women have unmet needs in coping with their bodily changes; and 3) further studies should be conducted to identify women's own needs in order to deliver appropriate health services for them during menopause.

Background

The WHI study aimed to study the effects of HT through a placebo-controlled, randomized clinical trial conducted in the U.S. to assess the risks and benefits of preventive administration of the therapy in healthy women. The trial for the combination of estrogen-progesterone, which recruited over 16,000 American women, was stopped at a mean of 5.6 years of follow-up. The first principal report published

in July 2002 showed that women taking the hormones faced an increased risk of breast cancer, stroke, and blood clots in legs and lungs, with no beneficial effect on cardiovascular disease, but with a decreased risk of bone fractures and colorectal cancer (Writing Group for the Women's Health initiative Investigators, 2002). Another trial, this one of women taking only estrogen after undergoing hysterectomy, was halted at the end of February 2004. It reported a small increased risk of stroke, no effect on cardiovascular disease, and fewer incidences of colon cancer or hip fractures (The Women's Health Initiative Steering Committee, 2004). Both trials were suspended prior to the originally scheduled completion time because the risks exceeded the benefits.

Many international studies have reported significant declines of HT use after the WHI study was halted and results were published. In the U.S., for instance, the prevalence rate of HT use peaked at 29% in the first half of 2002 among women aged 50 years or older, but fell to 17% in 2004 (Kelly et al., 2005; Kim et al., 2007). In European countries, such as the UK, France, Denmark, Norway and Sweden, the prevalence rate of HT use among middle-aged women or older exceeded 30% in the late 1990s. After the WHI reports, the rate declined by 15% within a year, falling by 40% by 2004 (Bakken, Eggen, & Lund, 2001; Gayet-Ageron et al., 2005; Mishra et al., 2006; Oddens & Boulet, 1997; Thunell, Stadberg, Milson, & Mattsson, 2005).

Most of the above-mentioned studies, however, were concerned with HT reduction.

Few of them discussed the implications of these declines in relation to menopausal women's health needs (Green et al., 2002; Im, 2006).

Taiwan has experienced a similar decline in HT use since the publication of the WHI reports. Two sources of data are available in Taiwan to examine national HT usage: national health surveys and medical claims data for reimbursement through the National Health Insurance (NHI) program. In the 2001 national health survey, 67% of women aged 30 and older who had experienced amenorrhea and related symptoms had visited doctors at least once; one third of that age group had used or were using HT (Bureau of Health Promotion, 2001). An analysis of the National Health Insurance (NHI) medical claims database showed that, among women older than age 40 who were followed over five years, the diagnosis rate of menopausal syndrome and HT prescription rate reached 16% and 13% respectively in 2001, but both decreased significantly from 2002 to 2004 (Kuo, Lee, & Huang, 2007). This significant drop of both diagnosis and prescription rates was confirmed by another cross-sectional study in women older than 45 (Huang, Tsai, Hsiao, & Liu, 2007).

These Taiwanese studies have many limitations, however. In the estimation of national HT use, for instance, the national health survey could not avoid recall bias from interviewees because of self-reported data; besides, it also interviewed women

younger than 40 who may or may not experience ‘menopause’. The five year follow-up fixed cohort study by *Kuo et al* (2007) did not account for the confounding variable, age, in analyzing the decrease of HT use after 2002, although it defined HT use strictly based on specific hormonal prescriptions. The cross-sectional study by *Huang et al* (2007) was restricted to assessing only the six-month impact of the WHI reports. Overall, these national studies recruited women aged 65 and over rather than those facing transitory stages— pre-, peri- or post-menopause—at middle age (C. Chang, Chow, & Hu, 1995). None of these studies discussed the implications of the sudden drop of HT use in relation to menopausal women’s health needs.

This study examines the changes in HT prescriptions and outpatient visits of middle aged women in Taiwan by analyzing longitudinal reimbursement data of the NHI program to assess changes in patterns of care and possible implications for the health needs of Taiwanese women at menopause. The NHI program, which provides national health coverage, was introduced in 1995. The mandatory enrollment health program covered more than 96% of Taiwanese population. It imposed fewer barriers for insured women to seek medical help, for example, by establishing relatively low payroll-related premium rate and co-payments on beneficiaries, requiring no referrals between general practitioners and specialists, and introducing a two-tier service system of Western and traditional Chinese medicine (S. H. Cheng & Chiang, 1997; T.

M. Cheng, 2003; J. F. R. Lu & Hsiao, 2003). As Bradshaw (1972) suggests in his theory of social needs, women's use of medical services can be regarded as a proxy of women's expressed needs: they turn their felt needs into expressed needs by seeking medical help (Robinson & Elkan, 1996). Accordingly, this study examines the extent to which middle-aged women used medical services of the NHI program as one of the expressions of their health needs at menopause.

Methods

The study population is Taiwanese women aged 45-64, who enrolled the NHI program. This study analyzes trends in women's use of outpatient care each month between 2000 and 2004, using claims data for reimbursement of services under the NHI program.

Data source

The longitudinal health insurance database (LHID) includes information about 200,000 individuals randomly sampled from the beneficiaries of the NHI program, which had registered approximately 23.7 million individuals from 1996. The database contains 200,000 individuals' demographic data and medical claims for both outpatient and inpatient medical services from 1996 to 2004. The demographic file includes variables, such as sex, date of birth, and records of enrollment. The files of

outpatient and inpatient medical claims comprise the medical activity, date, site where the activity was performed, diagnostic codes, prescription information, and expenditures by individual visits or admissions. This dataset was collected by the Bureau of National Health Insurance and is maintained by the National Health Research Institutes to provide researchers in Taiwan with data. To be consistent in the use of diagnosis codes in medical claims, this study traced the demographics and outpatient claim information of every woman in the sample from 2000 to 2004.

Definitions

HT (also known as *hormone replacement therapy*) was identified as a hormonal regimen prescribed by physicians under the NHI program for the study of women whom they had diagnosed as having menopausal syndrome. The classification of ‘drug’ in the study was the category of G03 which comprised more than 450 items related to sex hormones and modulators of the genital system under the reimbursement of the NHI program. The treatment of HT included all types, modes and forms of G03 prescriptions distributed to the women diagnosed with menopausal syndrome in the dataset.

Menopausal syndrome (MS) referred to the diagnoses claimed by physicians including the ICD-9-CM codes listed as 627.0, 627.1, 627.2, 627.3, 627.4, 627.8, or 627.9 (summarized as 627.X).

The *insured women* were the women registered in the NHI program in the database each year from 2000 to 2004.

Middle age represents the age of the insured women in the study aged 45 to 64. These women were divided into four five-year age groups: 45 to 49 years, 50 to 54 years, 55 to 59 years, and 60 to 64 years. The women in this study are those who were insured and middle-aged in the study period.

This study examined *contact rate*, *diagnosis rate* and *HT prescribing rate*.

Contact rate measured two specific groups: the percentage of women who sought Western medicine outpatient care and the percentage of women who sought traditional Chinese medicine (TCM) outpatient care under the NHI program in a specific period of time.

Diagnosis rate was the percentage of the women who were diagnosed with menopausal syndrome using Western medicine or TCM outpatient care of the NHI program in a specific period of time.

HT prescribing rate consisted of two types of measurement. One was the percentage of HT prescriptions for the insured middle-aged women in a specific period of time to assess women's expressed needs. Another was the percentage of HT prescriptions for outpatient visits resulting in diagnosis of menopausal syndrome in a specific period of time to assess physicians' practices.

Data analysis

Analytical statistics included frequency, percentage and Chi-square test using SAS (9.1.2) and Microsoft Office Excel (2003) to investigate three indicators: the rate of contact with the medical system as outpatients, the diagnosis rate, and the rate of HT prescription. The contact rate and the diagnosis rate were analyzed on a monthly basis for assessing the trends. The HT prescribing rate was analyzed not only on a monthly basis but also on an annual basis for international comparison.

Results

The study samples

From 2000 to 2004, the number of cases increased annually and middle-aged women represented around 10% of the entire beneficiary population in the NHI program (Table 1). Women aged 45-49 years comprised the largest percentage of study samples, followed by the group of women aged 50-54 years. The test of the goodness-of-fit for the distribution of age groups indicated that the sample appropriately represented the female beneficiary population aged 45-64 years in each year between 2000 and 2004 ($\chi^2 = 0.48, 1.97, 0.12, 0.20, \text{ and } 0.09$ respectively, $df= 3, p>0.05$).

HT prescriptions

Between 2000 and 2004 the rate at which insured middle-aged women were prescribed HT rose to 21.6% in 2001, but then began to decline in 2002 and dropped sharply to 9.7% in 2004 (Figure 1). This yearly national rate of HT prescriptions based on cross-sectional analysis showed a reduction of 13.1% from 2001 to 2002, 44.6% from 2001 to 2003, and over 55% from 2001 to 2004. These reductions occurred mainly in women in the 45-49 and 60-64 age groups.

Furthermore, as Figure 1 indicates, the pattern of changes in HT prescription was similar across each age group of women: prescription levels rose between 2000 and 2001, but started to drop in 2002 and continued to decline through 2004. Women aged 50 to 54 years were most frequently prescribed HT, followed by women aged 55-59, with the lowest prescription level in women aged 45-49. The prescribing rate of HT declined in cohorts aged 50 and older in each year.

The pattern of monthly HT prescriptions illustrated in Figure 2 shows that HT was prescribed to a higher proportion of women in the first half of 2002 than in the second half. The rate of HT prescription declined steadily from July 2002 to the end of 2004 with a sharp drop in April 2004. The sharpest drops in July 2002 and in April 2004 coincided with the release of the first and second major reports of the WHI trials. Overall, the monthly prescribing rate for the insured women declined by 69%

between 2002 and 2004.

In addition, more than 80% of outpatient visits resulting in diagnosis of menopausal syndrome were prescribed HT before July 2002, but the rate started to drop noticeably below 60% from April 2004 to the end of that year (Figure 3). In general, the monthly rate declined from mid-2002, fluctuated in 2003, but declined overall by 34% between 2002 and 2004.

Utilization of outpatient care

Between 2000 and 2004 the rate of women using outpatient care remained constant. According to Figure 4, except for 2003, more than 50% of insured women sought outpatient care using Western medicine while only 8% to 11% of insured women sought outpatient care using TCM. However, as Figure 5 shows, the rate of women diagnosed with menopausal syndrome who consulted Western medical practitioners decreased sharply starting in mid-year 2002. In contrast, the diagnosis rate among those seeking TCM treatment rose.

Discussion

The reduction of HT prescriptions in Taiwan

The results show that the decline in HT prescription in Taiwan coincided with the WHI publications. After the first WHI publication in *JAMA* in July 2002, the monthly prescribing rate for insured women showed a substantial decrease (see Figure 1). The annual rate for HT prescriptions also indicated a significant reduction from 2002. This trend was confirmed by two other studies (Kuo *et al.* 2007; Huang *et al.* 2007) in Taiwan.

HT for menopausal syndrome was the prevailing prescribed treatment in Taiwan, the rate of which was constant at over 80% before mid-2002. The HT prescribing rate for outpatient visits reduced significantly to below 60% from the second quarter of 2004 (Figure 3), corresponding to the second WHI publication in April 2004. Since HT is a regimen prescribed by physicians following their diagnosis, this trend indicated that doctors of Western medicine in Taiwan relied on HT prescriptions more than other regimens for menopausal women. Their HT prescription practice was further reduced in response to the WHI report in 2004.

The reduction of HT use was observed in two stages of variation between 2002 and 2004 in Taiwan. HT prescriptions fell more significantly after the first WHI report than after the second report (see Figure 2). The annual percentage of HT prescriptions fell from 18.8% to 12.3% between 2002 and 2003. It then continued to drop from 2003 to a low of 9.7% in 2004 (Figure 1). The first stage of reduction of HT in 2002

was likely a result of women's reaction to the WHI report broadcast by mass media as asserted by Kuo *et al.* (2006) and Dentzer (2003). The second stage decline in late 2004 was most likely due to the changes of prescription practices by doctors of Western medicine (see Figure 3).

In addition, in 2003, there was a fluctuating change in the number of HT prescriptions (Figures 2 and 3) which corresponded with the decrease in the contact rate of outpatient care in Western medicine (Figure 4). Studies indicate that the SARS epidemics (from March to July 2003) had an impact on the medical service utilization of the NHI program (H. J. Chang *et al.*, 2004; T. H. Lu, Chou, & Liou, 2007). Because of women's fear of contracting SARS from other patients if they went to a clinic, Western medicine outpatient services experienced a significant reduction during this period (Figure 4). Thus, the HT reduction in 2003 was likely partly due to the lower outpatient services attendance during the SARS outbreaks (Figure 5). Therefore, both the WHI publications and SARS epidemics are likely to have had an impact on lowering HT prescriptions during 2002, 2003 and 2004 in Taiwan.

Health needs of menopausal women

Utilization of outpatient care as an indicator of women's health needs remained constant among insured middle-aged women in Taiwan. More than 60% of insured

women obtained medical advice by seeking outpatient services of Western and/or traditional Chinese medicine in the NHI program in each month from 2000 to 2004. Although this use decreased for several months in 2003, it rebounded to levels closer to the usual attendance rate after the SARS outbreaks.

The reduction in HT use influenced by international and local events in Taiwan demonstrated the elasticity of the need for HT among menopausal women. First, the rate of HT prescriptions dropped due to the SARS outbreaks, but did not rebound to the previous levels after that epidemic. Second, increased attendance at TCM for menopausal syndrome between 2002 and 2004 suggested that some of the women in Taiwan had switched to TCM as alternative care. In short, as Bradshaw proposed that 'utilization rate' is a form of expressed need, the over 55% reduction of HT use showed that women did not continue with HT, and thus, did not adopt it as an essential treatment.

The constant level of health service utilization and the increased use of TCM by insured middle-aged women in Taiwan indicated there were menopausal health needs. First, the constant level of utilization of outpatient care demonstrated that health problems existed among the insured middle-aged women. Second, if HT was considered to be the required treatment for some women, the 55% reduction between 2002 and 2004 may mean that there were unmet needs for those who were once

prescribed HT but stopped its use due to the WHI reports and the SARS epidemic.

Third, 9.7% of the women continued to use HT after 2004. Studies suggest that women continued HT for a variety of reasons despite contra-indications to use (Guay et al., 2007; Ness, Aronow, Newkirk, & McDanel, 2005) and that it is necessary to examine whether they were informed consumers.

This study has the same limitation as *Kuo, etc. (2007)* and *Huang, etc. (2007)*: the trend of diagnosis rate of menopausal symptoms corresponded closely to the decline in HT prescriptions after 2002 (Figures 2 and 5). Since the analysis was based on the database for reimbursement through the NHI program rather than on patient medical records, this limitation can be regarded as a systematic error when comparing the data each month. However, HT prescriptions by physicians in this study could not be generalized to women's actual use of HT.

The second limitation is that this study draws only from quantitative data, which is insufficient for identifying in-depth health needs from the women's perspectives. Thus, it would be useful to conduct qualitative studies to investigate women's views grounded in their experience.

The third limitation lies with the fact that the study did not set out to test directly the effect of the impact of the WHI publications on the use of HT. Thus, the changes in use of HT coinciding with the WHI's publication perhaps can not be generalized as

conclusive evidence.

Conclusion

This study has analyzed the changes in HT prescription rates and outpatient care utilization, and examined the implication of these changes for middle-aged women in meeting their menopausal health needs. HT was previously the most common Western medical treatment for women diagnosed with menopausal syndrome. A decline of more than 55% in HT prescriptions occurred between 2002 and 2004 following the WHI reports and the SARS epidemic, demonstrating the elasticity of need for HT for menopausal women in Taiwan. This decline coincided with an increasing demand for TCM as an alternative treatment for menopausal syndrome and a steady rate of outpatient health services utilization by middle-aged women.

This study, on the one hand, by examining the reduction of HT use in Taiwan, provides evidence to demonstrate that HT was not adopted as an essential treatment in meeting the health needs of menopausal women. On the other hand, findings of the steady outpatient attendance rate and an increased use of TCM by menopausal women clearly indicates that women still need help to deal with various stages of menopause. However, in order to provide appropriate health care services, we need to know more about the nature of women's needs. These needs may range from access to

information, to health promotion strategies to improve lifestyle necessary to cope with the physical and psychological changes they were experiencing, to treatments required for more severe symptoms, and to how they view TCM and whether it is useful as an alternative treatment option. Further studies should comprehensively investigate menopausal women's health needs, with special attention to their own views and concerns in order to develop appropriate health strategies to promote and safeguard the health of middle-aged women.

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Table 1. Number (n) and percentage (%) of the beneficiary samples, by age

Year Age	2000		2001		2002		2003		2004	
	n	%	n	%	n	%	n	%	n	%
45-49	6893	37.3	6997	36.3	7131	35.8	7319	35.4	7480	34.9
50-54	4648	25.2	5355	27.8	5742	28.9	6117	29.6	6437	30.0
55-59	3502	18.9	3398	17.6	3527	17.7	3712	17.9	4007	18.7
60-64	3438	18.6	3524	18.3	3495	17.6	3536	17.1	3505	16.4
Total	18481	100.0	19274	100.0	19895	100.0	20684	100.0	21429	100.0

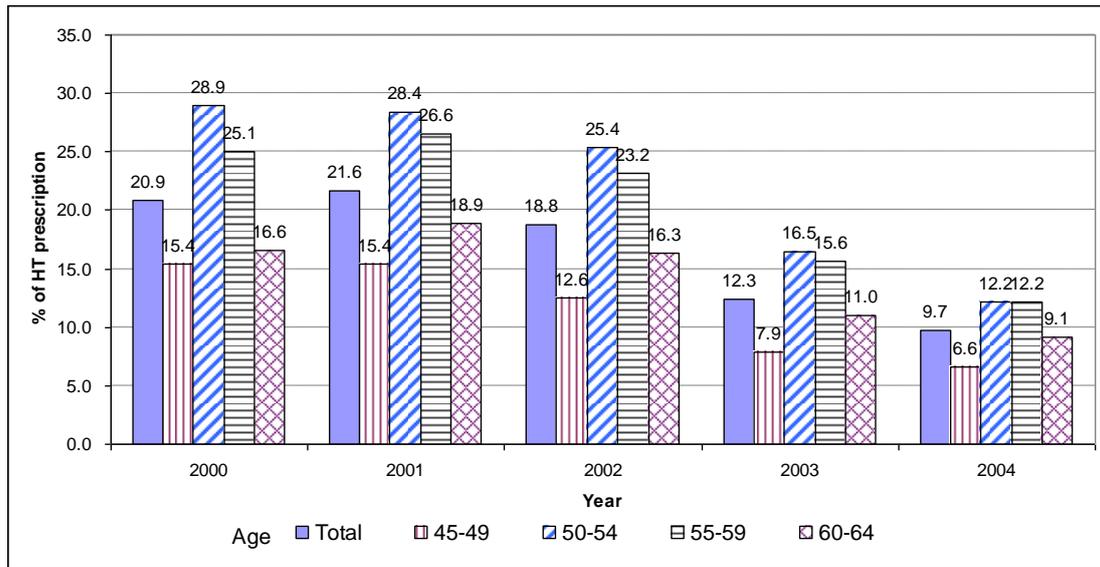


Figure 1. Annual percentage of prescribing HT for insured middle-aged women in Taiwan, 2000 - 2004

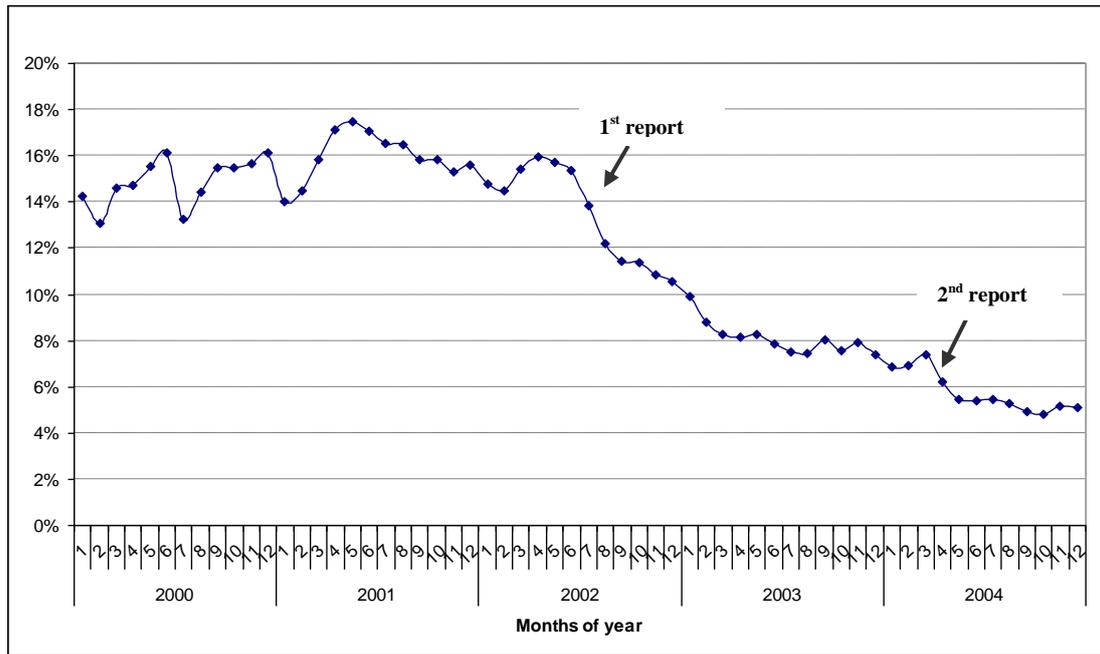


Figure 2. Monthly percentage of prescribing HT for insured middle-aged women in Taiwan, 2000 - 2004

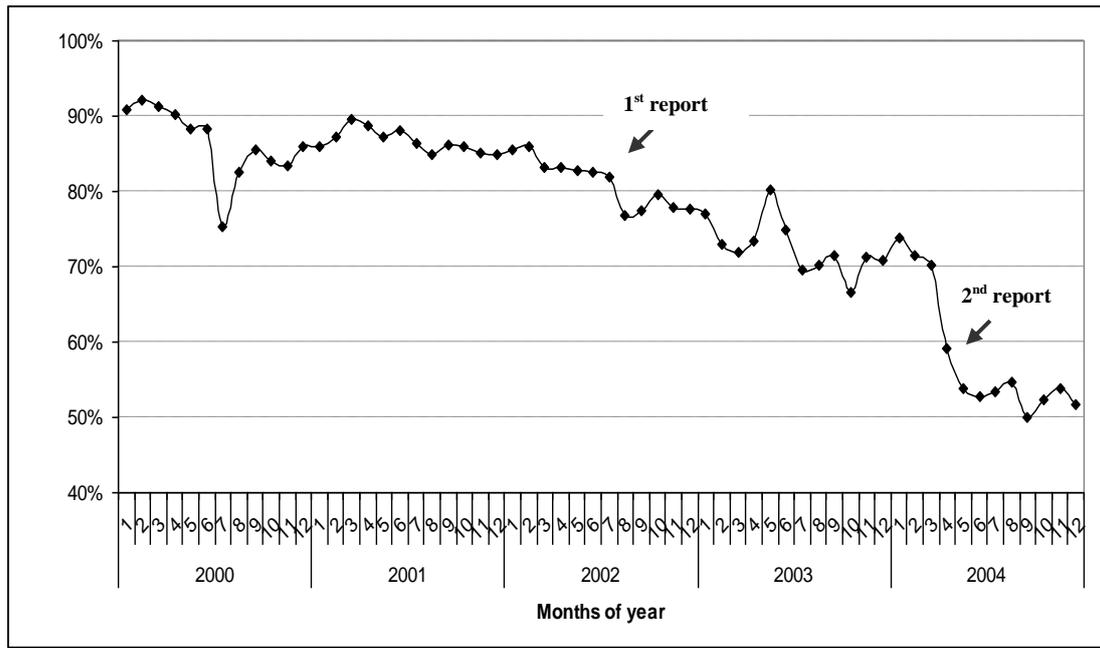


Figure 3. Monthly percentage of prescribing HT for outpatient visits resulting in diagnosis of menopausal syndrome in Taiwan, 2000 – 2004

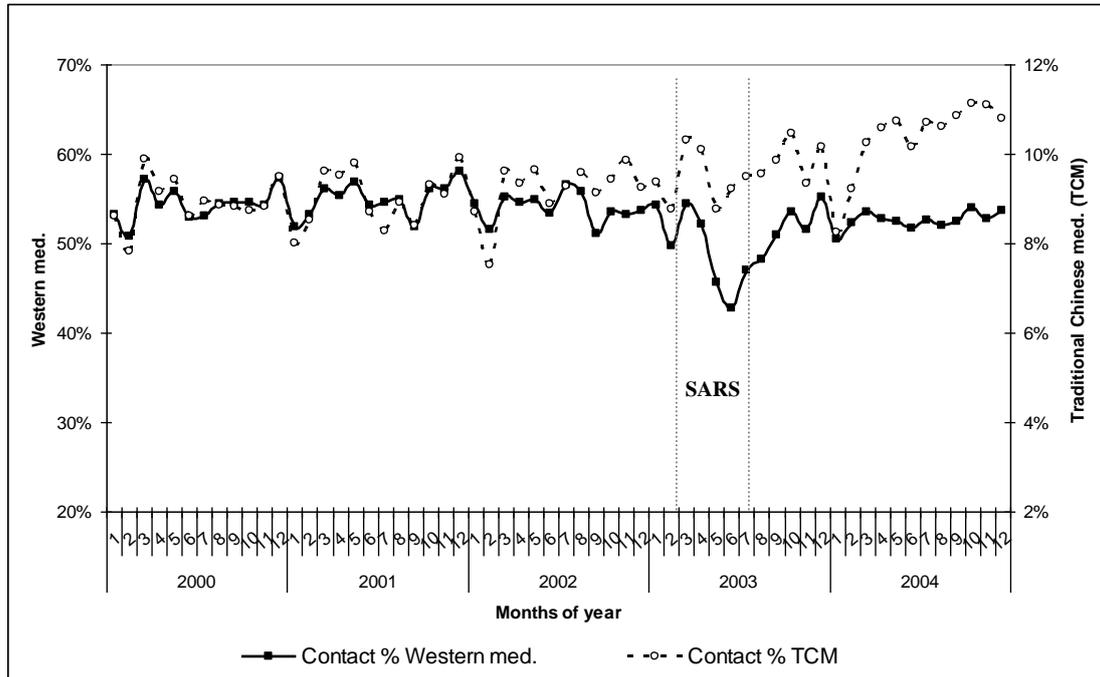


Figure 4. Monthly contact rate of using Western medicine outpatient care or traditional Chinese medicine outpatient care in Taiwan, 2000 - 2004

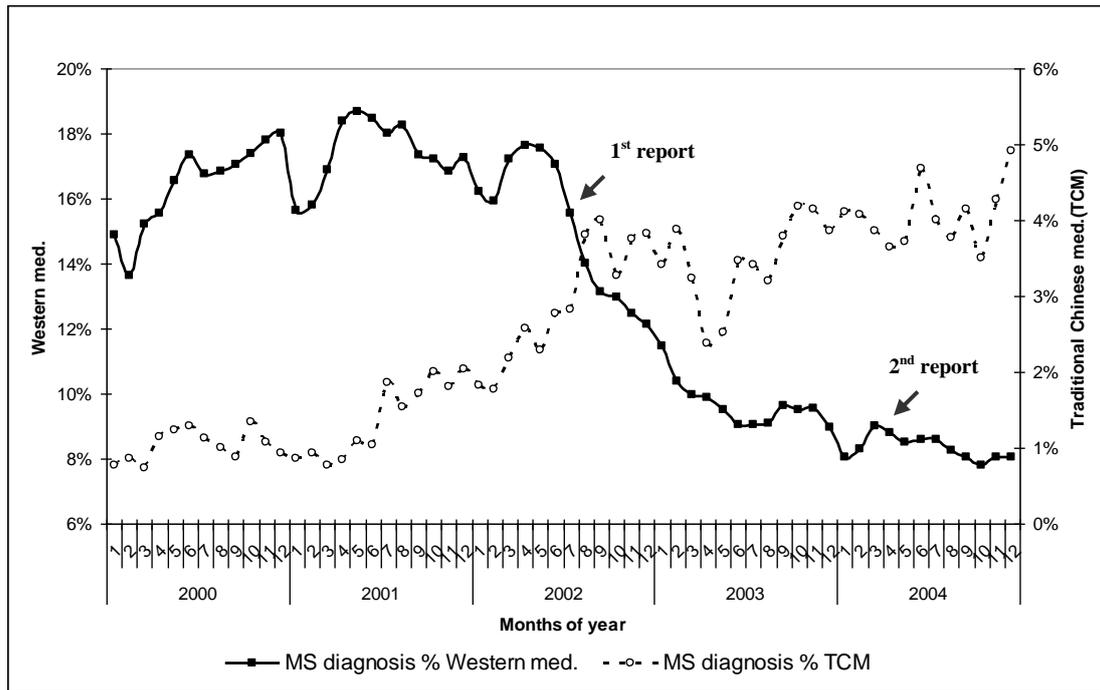


Figure 5. Monthly diagnosis rate of menopausal syndrome of using Western medicine outpatient care or traditional Chinese medicine outpatient care in Taiwan, 2000 - 2004