# Analysis of the Health Status of Foreign Brides in A Community Hospital in Taipei County

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- **Background:** Very few studies regarding the health status of foreign brides in Taiwan are so far available. The purpose of this study was to analyze the health status of foreign brides in a community hospital setting in Taipei County.
- **Methods:** We retrieved and analyzed 493 foreign brides' medical records recorded between November 1, 2002 and October 31, 2003. The records included a medical history, physical examination parameters, serological test data for infectious diseases, urinalysis for drug use, stool sample data for intestinal parasites, and chest radiography mainly to rule out tuberculosis.
- **Results:** Of the 493 foreign brides included in this study, 247 were from China (50.1%); 122 from Burma (24.7%), 55 from Indonesia (11.2%), and 32 from Vietnam (6.5%). A small proportion of women, 69 (14%), were infected with intestinal parasites. Seven subjects (1.4%) had tuberculosis, of which 4 (0.8%) were diagnosed as having old tuberculosis. None of the foreign brides was positive for the HIV antibody or on the syphilis screening. The seronegative rate of anti-rubella IgG among the foreign brides was 14.4%. Three percent of the brides had an elevated morphine level ( $\geq$  300 ng/mL), but none of them was positive ( $\geq$  500 ng/mL) for amphetamine.
- **Conclusions:** Future national statistics should include brides from China. The main concerns about foreign brides are the low vaccination rate against rubella virus, the high infection rate with intestinal parasites, and the high prevalence of tuberculosis. A nationwide survey should be carried out in order to assess the health status of all foreign brides in Taiwan. (*Chang Gung Med J 2004;27:894-902*)

### Key words: foreign bride, health examination, parasitic infection, Taiwan.

Rapid social and economic changes in Taiwan in recent years have created an increasingly noticeable trend: the arrival of a large number of foreign brides from Southeast Asia. According to statistics for 2003 from the Ministry of the Interior, there were 68,159 foreign brides residing in Taiwan. The majority of these brides were from Vietnam (42,731), Indonesia (10,426), Thailand (4090), the Philippines (3523), Cambodia (2393), Japan (1655), Malaysia (774), America (430), Korea (556), and Burma (547).<sup>(1)</sup> A large number of these women (10,908) live in Taipei County.

There are many health implications of this transnational marital population, including infectious

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diseases, psychosocial problems, and substance abuse. Illness and death rates associated with migration are exacerbated by a lack of policies to ensure that immigration is a healthy and socially productive process. According to a past survey, immigrant women have greater numbers of low-birth-weight babies and premature birth than other groups.<sup>(2)</sup> Their health not only influences themselves, but also their families, future children, and even the entire community. We must pay more attention to the health problems of foreign brides. This study describes the health status of foreign brides in 2002 based on a community hospital's records of foreign brides examined in Taipei County, northern Taiwan.

## **METHODS**

This survey was conducted in a community hospital in Taipei County. We retrieved and analyzed 493 foreign brides' medical records recorded between November 1, 2002 and October 31, 2003. All of these women were required to undergo a compulsory medical examination for immigrants in order to identify those who might pose a risk to public health and safety, and those who may require excessive health and social services. The medical examination consisted of a medical history, physical examination, urinalysis for screening amphetamine and morphine levels, stool sampling for detecting intestinal parasites, chest radiography for ruling out tuberculosis, and serological tests for screening such diseases as acquired immunodeficiency syndrome (AIDS), syphilis, and rubella. All screenings were routinely conducted in the mornings by experienced medical personnel. Other data collected from these medical records included the past medical history, as well as allergy, transfusion, and surgical histories.

We analyzed the data with Statistical Analysis System (SAS) software version 8.01. The characteristics of foreign brides were examined by comparing the means and standard deviations of the study variables.

Height and weight of subjects were measured with an automatic standing scale with a height attachment. The scale was calibrated automatically each time it was used. According to the criteria of obesity set by the World Health Organization (WHO) for the Asia-Pacific region, a body mass index (BMI) of  $\geq 25$  kg/m<sup>2</sup> is defined as obesity; a BMI of < 25 kg/m<sup>2</sup> and  $\ge 23$  kg/m<sup>2</sup> is defined as overweight; a BMI of  $\ge 18.5$  kg/m<sup>2</sup> and < 23 kg/m<sup>2</sup> is defined as normal weight; and a BMI of < 18.5 kg/m<sup>2</sup> is defined as low body weight.<sup>(3)</sup>

Blood pressure is a peripheral measurement of cardiovascular function. Indirect measurement of blood pressure was made with a stethoscope and a mercury sphygmomanometer. The manometer was kept vertical, and all readings were at eye level, no more than 3 feet away.<sup>(4)</sup> The blood pressure (BP) measurements were obtained from a seated subject with the arm level and the heart under nonstressful circumstances. The systolic blood pressure was determined by the onset of the tapping Korotkoff sounds (K1). The fifth Korotkoff sound (K5), or the disappearance of the Korotkoff's sound, was defined as the diastolic blood pressure.<sup>(5)</sup> If the blood pressure reading proved to be greater than the normal range, a second reading was taken following a further 5-min rest period by the same nurse. According to the criteria reported by the National Institute of Health, Taiwan, hypertension is defined as systolic blood pressure  $\geq$  140 mmHg or a diastolic blood pressure  $\geq$  90 mmHg. The classification of hypertension was made according to the seventh report of the Joint National Committee.<sup>(6)</sup>

The Snellen chart was used for visual screening. Abnormal visual acuity was defined as naked vision of less than 0.8.<sup>(4)</sup> All of the above procedures were carried out by 2 well-trained nurses.

Blood samples were taken for screening of the following disease: AIDS, syphilis, and rubella. The serum HIV antibody and rubella IgG antibody levels were determined using a commercially available enzyme-linked immunosorbent assay (ELISA). The rubella antibody status was classified as negative immunoglobulin G (IgG)  $\leq$  14 IU/ml) or positive (IgG > 14 IU/mI).<sup>(7)</sup> The antibody produced in syphilis was detected by the nontreponemal test (Venereal Disease Research Laboratory test, VDRL) and treponemal test (Treponema pallidum hemagglutination assay, TPHA).<sup>(29)</sup> A random spot urine sample was collected for the measurement of amphetamine and morphine levels. The urine amphetamine and morphine levels were checked by the enzyme multiplied immunoassay technique (EMIT). A positive urine amphetamine test was defined as an amphetamine level of > 500 ng/mL, and a positive urine morphine test was defined as a morphine level

### of $> 300 \text{ ng/mL.}^{(30)}$

Fresh fecal samples of about 1 g were collected and centrifuged. Precipitates were collected, and the

smear of precipitates was examined under a microscope. If the feces was found to contain pus, mucus, or blood, a smear with an iodine-eosin staining solu-

**Table 1.** Species and Multiple Infection Rates of Parasites among Foreign Brides by Nationality

Nationality	China	Vietnam	Philippines	Indonesia	Burma	Thailand	Malaysia	Hong Kong	Cambodia	Others	Total
Infection	(247)*	(32)	(7)	(55)	(122)	(6)	(5)	(5)	(5)	(9)	(493)
Negative	225	26	6	41	99	5	5	5	3	9	424 (86.0%)
finding											
Single											
infection											
Blastocystis	16†	4	1	12	17	1	0	0	2	0	53 (10.8%)
hominis											
Giardia											
lamblia	0	0	0	0	2	0	0	0	0	0	2(0.4%)
Endolimax											
nana	1	0	0	0	1	0	0	0	0	0	2(0.4%)
Trichuris											
trichiura	0	0	0	0	0	0	0	0	0	0	0(0%)
Strongyloides											
stercoralis	0	1	0	0	0	0	0	0	0	0	1 ( 0.2%)
Entamoeba	1	0	0	0	2	0	0	0	0	0	3 ( 0.6%)
coli/hartmanni											
Clonorchis											
sinensis	3	0	0	0	0	0	0	0	0	0	3 ( 0.6%)
Subtotal	21	5	1	12	22	1	0	0	2	0	64 ( 13%)
	(8.5%)‡	(15.6%)	(16.7%)	(21.9%)	(17.9%)	(16.7%)	(0%)	(0%)	(40%)	(0%)	
Double											
Infection											
Blastocystis											
and E. coli/											
hartmanni	0	0	0	2	0	0	0	0	0	0	2(0.4%)
Blastocystis											
and T. trichiura	0	0	0	0	1	0	0	0	0	0	1 ( 0.2%)
Blastocystis											
and E. nana	0	1	0	0	0	0	0	0	0	0	1 ( 0.2%)
	(0%)	(3.1%)	(0%)	(3.6%)	(0.8%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Triple											
infection											
Blastocystis, E.											
coli/hartmanni,	1	0	0	0	0	0	0	0	0	0	1(0.2%)
and E. nana											
Subtotal	1	0	0	0	0	0	0	0	0	0	1(0.2%)
	(0.4%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Grand Total	22	6	1	14	23	1	0	0	2	0	69 ( 14%)

\*Number of foreign brides examined by nationality

†Infection rates of parasites by nationality

<sup>‡</sup>Infection rates in parenthesis

tion was examined to determine the existence of parasites.<sup>(8)</sup>

A posteroanterior-view chest radiograph was used to screen for tuberculosis. A suspicion of pulmonary tuberculosis was based on an abnormal chest radiograph in a subject with respiratory symptoms. If the classic picture of infiltrates and cavities was presented in the apical and posterior segments of the upper lobe or in the superior segment of the lower

Table 2. Findings of Chest Radiographs

	Number	Percentage
Finding of chest radiographs		
Negative	413	83.8%
Infiltrates	19	3.9%
Tuberculosis (TB)	3	0.6%
Old tuberculosis	4	0.8%
Pneumonia	3	0.6%
Hypoinflation	2	0.4%
Peribronchial or pleural thickening	3	0.6%
Cardiomegaly	1	0.2%
Increased lung markings	15	3.0%
Granuloma	3	0.6%
Patchy opacity	3	0.6%
Scoliosis	5	1.0%
Cardiomegaly and increased	3	0.6%
lung markings		
Infiltrates and TB	1	0.2%
Not done*	15	3.0%
Total	493	

\* Chest x-ray was not given mostly due to pregnancy.

#### Table 3. General Data by Nationality

lobe, then pulmonary tuberculosis was highly suspected under guidelines published by the Center for Disease Control, the Department of Health, Executive Yuan, Taiwan.<sup>(10)</sup>

## RESULTS

There were 493 foreign brides included in this study. Among them, 247 were from China (50.1%), 122 from Burma (24.7%), 55 from Indonesia (11.2%), and 32 from Vietnam (6.5%). The remaining 37 women were from the Philippines (1.4%), Thailand (1.2%), Malaysia (1.0%), Hong Kong (1.0%), Cambodia (1.0%), and other countries (1.8%). The mean age of the foreign brides was  $31.96 \pm 7.38$  years.

The youngest woman was 18 and the eldest was 61 years of age. Almost 98% (483) of the foreign brides denied any past medical history. The remaining 2% (10) reported thyroid goiter (0.6%), tuberculosis (0.4%), diabetic mellitus (0.2%), asthma (0.2%), heart disease (0.2%), abnormal liver function (0.2%), and facial palsy (0.2%). Most of the subjects (92.1%) also denied any surgical history. No one had received a blood transfusion, and 99.2% of subjects denied any history of allergies. The mean body height was  $53.67 \pm 8.14$  kg. The mean BMI of all subjects was  $21.59 \pm 3.12$  kg/m<sup>2</sup>. Thus, based on WHO Asia-Pacific criteria, the majority of foreign brides had a normal weight.

	Age (years)	Height (cm)	Weight (kg)	BMI	SBP	DBP
	Mean (STD)	Mean (STD)	Mean (STD)	$(kg/m^2)$	(mmHg)	(mmHg)
				Mean (STD)	Mean (STD)	Mean (STD)
Total	31.96 (7.38)	157.66 (5.3)	53.67 (8.14)	21.59 (3.12)	107.18 (12.74)	70.55 ( 7.88)
China (247)	33.73 (6.37)	158.84 (5.3)	54.12 (7.85)	21.45 (2.93)	106.61 (12.26)	70.57 (7.64)
Vietnam (32)	26.22 (6.64)	154.18 (4.1)	48.31 (5.70)	20.36 (2.56)	105.06 (12.54)	68.13 ( 7.09)
Philippines (7)	28.43 (3.78)	157.97 (6.1)	57.10 (12.4)	22.87 (4.83)	109.71 (12.51)	66.29 (7.16)
Indonesia (55)	26.95 (6.81)	155.48 (4.5)	53.13 (8.51)	21.96 (3.22)	108.58 (13.10)	71.38 ( 7.81)
Burma (122)	32.39 (8.08)	156.96 (5.1)	54.36 (8.49)	22.08 (3.44)	108.28 (13.65)	71.03 ( 8.38)
Thailand (6)	30.50 (6.63)	158.17 (4.5)	55.60 (7.36)	22.17 (2.26)	101.67 ( 7.53)	67.00 ( 5.48)
Malaysia (5)	35.20 (5.81)	160.78 (3.9)	56.06 (9.55)	21.62 (3.15)	108.00 ( 8.37)	74.00 ( 5.48)
Hong Kong (5)	30.40 (7.50)	159.50 (5.3)	53.30 (9.03)	21.40 (4.73)	104.00 (13.42)	66.00 ( 5.48)
Cambodia (5)	28.00 (6.00)	159.40 (4.5)	49.04 (5.20)	19.29 (1.73)	98.80 ( 5.22)	70.40 ( 0.89)
Others (9)	33.67 (8.47)	156.50 (7.6)	51.73 (8.03)	21.07 (2.47)	114.67 (16.76)	73.11 (13.49)

Abbreviations: STD: Standard deviation; BMI: Body mass index; SBP: Systolic blood pressure; DBP: Diastolic blood pressure.

The physical examination showed that 0.2% of foreign brides had arrhythmias, 12.4% had abnormal visual acuity, 0.8% were colorblind, 1.8% had thyroid goiters, 7.9% had surgical scars, and 1.6% had dental problems; on the other hand, 94.1% of the women had no significant physical findings.

None of the subjects was positive for HIV antibody and the seronegative rate for rubella IgG antibody was 14.4%. Serological tests for syphilis were all negative. In addition, 3% of brides had elevated morphine levels ( $\geq$  300 ng/mL), but no one was positive for amphetamine use ( $\geq$  500 ng/mL).

Of the 493 foreign brides examined, the prevalence rate of parasitic infections was 14%. The major parasites found were Blastocystis hominis (11.8%), Entamoeba coli (1.2%), E. nana (0.8%), Clonorchis sinensis (0.6%), Giardia lamblia (0.4%), Strongyloides stercoralis (0.2%), and Trichuris trichiura (0.2%). The highest parasitic infection rate was found among Cambodian brides (40%), followed by Burmese (18.8%) and Vietnamese brides (18.8%). Among the 69 brides with parasitic infections, 65 were infected with 1 species of parasite. Only 1% of infected women had co-infections of at least 2 different species of parasites (Table 1). About 13.2% of the women had abnormal chest x-ray findings (Table 2). Additionally, 6.9% of the women had increased lung markings and pulmonary infiltrates; 1.4% had tuberculosis, of which 0.8% were diagnosed as having old tuberculosis (TB).

# DISCUSSION

This study is one of the first to explore the health status of foreign brides in Taiwan. Our sample does not represent all foreign brides in Taiwan because the majority of the brides are from China (50.1%) and Burma (24.7%). The origins of foreign brides in our sample differed from the statistical data for 2002 published by the Ministry of the Interior because the national statistics do not include brides from China. There is also a large Burmese group living in Zhonghe City in Taipei County, near the community hospital we used in this study. These factors account for most of those differences. The study provides information regarding the increasing numbers of Chinese women that have immigrated to Taiwan. It seems reasonable to include Chinese brides in the national statistics.

The physical examinations showed that the mean BMI of foreign brides was  $21.59 \pm 3.12 \text{ kg/m}^2$ ; thus the majority had a normal weight. Nonetheless, 1 study reported that 31.8% of Taiwanese women were either overweight or obese.<sup>(11)</sup> The prevalence of being overweight or obese in Taiwanese women is higher than that in foreign brides. The issue of obesity is not as important for foreign brides as it is for Taiwanese women.

Serological testing showed that the seronegative rate for anti-rubella IgG was 14.4%. The low titers of anti-rubella IgG are of concern due to reinfection and inherent risks to the fetus during pregnancy, which occurs more often in these women. In Taiwan, 4 epidemics of rubella infection occurred in 1957-1958, 1968-1969, 1977, and 1994. In the 1957 epidemic, up to 25% of gradivas infected during the first trimester suffered various complications, such as stillbirth, premature labor, and congenital defects of the fetus. After the epidemic in 1977, the disease appeared to be endemic. The rubella vaccine was introduced to Taiwan in 1972; the measles, mumps, and rubella vaccination (MMR) was also introduced later.<sup>(12)</sup> The incidence of rubella infection is now low and is preventable by vaccination. Yearly reports of its incidence have consistently shown a few isolated cases according to the San-Ma Yi-Feng Eradication Program of the Bureau of Communicable Disease Control, Department of Health, Taiwan since 1990. Nonetheless, increased case numbers of women infected with the rubella virus have occurred over recent years. For example, 3 cases of congenital rubella syndrome were reported in 2001. Two out of the 3 infected infants were born to foreign brides.<sup>(13)</sup>

The World Health Organization in 2000 reported that only 105 of 214 (49%) countries and territories that reported to the organization actually implement rubella vaccination programs. An estimated 100,000 cases of congenital rubella syndrome still occur worldwide each year.<sup>(14)</sup> A study in Australia also reported that Asian women residing in Australia had significantly increased odds of being seronegative compared to those born in Australia between 1976 and 2000. The reason given for this was the lack of comprehensive vaccination programs in Asia.<sup>(7)</sup>

A report on premarital health examinations in Taiwan in 2001 noted that 14.6% of females were negative for the rubella antibody,<sup>(15)</sup> which was similar to that in our study. However, routine serological

testing for immunity to rubella is not necessary if subjects have an appropriate immunization history. Some subjects with a history of documented rubella vaccination were found to have a negative serum IgG by ELISA. Such subjects may be given a dose of MMR vaccine. However, an additional dose is not considered a booster dose because a primary immune response to the first dose has already provided longterm protection even when the serological data are negative.<sup>(16)</sup> One study also suggested that increasing antibody titers from the second dose of vaccine are not sustained. The first dose of rubella-containing vaccine induces seroconversion in more than 95% of recipients.<sup>(9)</sup> Lin and colleagues also reported the efficacy of rubella antibody produced in Taiwan was nearly 100% since all 9th-grade junior high schoolgirls have been vaccinated starting in 1986.<sup>(17)</sup> Due to a lack of comprehensive vaccination programs in Southeast Asia and China, foreign brides often do not have documentation of having been vaccinated. The MMR vaccine should be given to all immigrant women who are not concurrently pregnant and who have negative rubella titers, preferably before or right after entering the country.

None of the subjects was positive for HIV antibody or for serological tests for syphilis. The statistical data in 2001 also showed positive rates of 0% for HIV antibody and 0.02% for syphilis in foreign laborers.<sup>(18)</sup> If positive data for HIV antibody are noted, then the Western blot test should be run to identify any false-positive results.

Three percent of brides had elevated morphine levels ( $\geq$  300 ng/mL), but none of them was positive for amphetamine use ( $\geq$  500 ng/mL). The positive result should be further confirmed using a Hewlett-Packard gas chromatography detector (GCMS). Some false-positive data may be generated due to interferences with other medications such as fenfluramine, chlomezanone, and diethylpropion.<sup>(19)</sup>

Among the 493 foreign brides, 14% were infected with intestinal parasites. In a previous study on intestinal parasites among 6146 foreign workers, the overall prevalence was only 10%. The infection rate was higher among female workers (11%) than male workers (5%).<sup>(8)</sup> Three studies reporting on parasitic infections of male and female foreign laborers from 1995 to 2000 also showed lower prevalences (6.2%,<sup>(20)</sup> 3.26%,<sup>(21)</sup> and 3.66%<sup>(22)</sup>) compared to our results. These differences may have been due to the fact that in our study, there were 247 women (50.1%) from China, a place of origin not included in those previous studies. In a 20-year, long-term epidemio-logical study, the overall infection rate of soil-transmitted intestinal nematodes in Taiwanese school-children was as high as 70% in the 1950s. But this rate was reduced to less than 2% in the 1990s.<sup>(23)</sup>

In a study of B. hominis infections between January 1 and December 15, 2002, the prevalence was 1.6% among the 1975 outpatients surveyed in a medical center in Taiwan. Among those infected individuals, 71% were immigrants. Approximately 70% were female, 45.2% were from Southeast Asia, and 16.1% were from China. The prevalence of this protozoan has increased due to growing international immigration.<sup>(24)</sup> While many foreign brides may have had fecal examinations and treatment before leaving their country, some probably evaded having stool examinations or did not undergo chemotherapy. The infected women may directly or indirectly transmit parasitic infections to all members of their families. If there are no effective measures to prevent the spread of parasites carried by infected women, the infection rate in Taiwan may significantly increase. The detection and treatment of infectious diseases are important for the health of individuals, families, and the general public.(25)

Tuberculosis is both an old and an emerging infection risk throughout the world. It is highly contagious, particularly when a person has active cavitary disease. Outbreaks of TB infection may develop in Taiwan if the surveillance system for infection control fails. In our study, the overall suspected tuberculosis rate diagnosed by chest radiography was 1.4%, of which 0.8% was diagnosed as being old TB. This prevalence was much higher than the overall TB rate (0.12%) for foreign-born persons arriving in the US in  $1989^{(26)}$  and than the rate (0.80%) in 2002 in Taiwan.<sup>(27)</sup> The initial screening by chest radiography in our medical examination might not be sufficient to detect all incoming TB cases. Current recommendations for screening include chest radiography and purified-protein derivative (PPD) skin testing.

Furthermore, sputum specimens for culture should be obtained from patients who have symptoms suggestive of TB, a compatible history, or suggestive radiographic findings. Screening for infectious diseases provides the opportunity to detect many treatable and transmissible infections such as TB. A thorough knowledge of the infections endemic in regions of immigrant origins and sensitivity to cross-cultural issues would be helpful in providing the most appropriate medical care to immigrants.<sup>(25)</sup>

Our study does not represent the health status of all foreign brides in Taiwan as a whole because this is a regional data. However, the results of this study point out the necessity of including brides from China in the national statistics as they comprise a large proportion of foreign brides in Taiwan nowadays. The low vaccination rate against rubella virus, the high infection rate with intestinal parasites, and the high prevalence of tuberculosis are a concern among the foreign brides in this study. A strict policy of health checkups for immigrant women should be instituted to decrease the overall prevalence of intestinal parasitic infections.<sup>(28)</sup> Screening and tuberculosis prophylaxis are also critical for decreasing its prevalence among family members.

A thorough, large-scale survey should be carried out in order to assess the health status of all foreign brides in Taiwan. In the meantime, more-thorough surveillance and monitoring of the health status of new foreign brides immigrating to Taiwan should be implemented to ensure the protection of the Taiwanese general public.

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# 台北縣某社區醫院外籍新娘健康狀況評估

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- **背 景**: 政府准許外籍新娘來台灣定居的政策已實行多年,然而有關這群族群的健康狀況的 資料卻相當缺乏,因此本研究主要對台北縣某社區醫院外籍新娘健康狀況做評估。
- **方法**: 資料收集是回溯自2002年11月1日至2003年10月31日外籍新娘體檢報告。在這段時間共有493位外籍新娘在臺北縣某社區醫院接受身體健康檢查,檢查項目包括病史詢問、身體檢查、血清檢查、尿液藥物篩檢,糞便檢查及胸部X光檢查。
- 結果:本研究共有493人納入分析,其中大多數有247人(50.1%)來自中國大陸,122人(24.7%) 來自緬甸,55人(11.2%)來自印尼,32人(6.5%)來自越南。69人(14%)糞便檢查發現 有腸道寄生蟲,胸部X光異常者7人(1.4%)判定爲肺結核,其中4人(0.8%)爲陳舊性 肺結核;未發現有愛滋抗體陽性及梅毒陽性反應的患者,但德國麻疹抗體陰性者佔 14.4%;無一人爲安非他命測試陽性,但有3%測試出嗎啡陽性反應。
- 結論:日後政府統計資料將中國大陸新娘納入是有必要性的。高盛行率德國麻疹抗體陰性,高腸道寄生蟲及肺結核的感染比率在外籍新娘可觀察到。應有更大型周嚴的研究對於全台灣外籍新娘的健康狀況做整體的評估。 (長庸醫誌 2004;27:894-902)
- 關鍵字:外籍新娘,健康檢查,腸道寄生蟲感染,台灣。