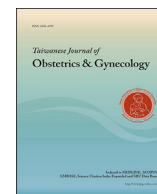




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Original Article

Temporal trend and nationwide utility for hysterectomies in Taiwan, 1997–2010

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ABSTRACT

Objective: This study investigates the nationwide utilization and temporal trend of hysterectomies in Taiwan.**Materials and Methods:** The present study used the National Health Insurance Research Database that included claims of nearly the entire population in Taiwan since the inception of the National Health Insurance program in 1995. We analyzed age-adjusted rates of hysterectomies in Taiwan from 1997 through to 2010 and compared with the rates in 16 countries of the Organization for Economic Co-operation and Development. We also examined the utilization of various types of hysterectomies in Taiwan during this period.**Results:** There was a cross-country variation in the age-standardized rate of hysterectomy: 105 per 100,000 females in Spain, 156 per 100,000 females in Taiwan, 179 per 100,000 females in 16 Organization for Economic Co-operation and Development countries, and 325 per 100,000 females in the United States in 2008. The trend of the age-standardized rate of hysterectomy in Taiwan declined from 222.3 per 100,000 women in 1998 to 145.2 per 100,000 women in 2010. The most common type of hysterectomy during this period was total abdominal hysterectomy (51.2%). Subtotal hysterectomies increased by 117% ($r^2 = 0.89$; $p < 0.01$), from 672 in 1997 to 1458 in 2010; however, total hysterectomies decreased by 3.5% ($r^2 = 0.43$; $p = 0.01$), from 20,966 in 1997 to 20,230 in 2010. Laparoscopically assisted procedures (laparoscopic supracervical hysterectomy and laparoscopic hysterectomy) increased 4.98-fold ($r^2 = 0.23$; $p = 0.09$), from 1453 in 1997 to 8684 in 2010. By contrast, the proportion of conventional open hysterectomies (total abdominal hysterectomy, and subtotal or supracervical abdominal hysterectomy) decreased by 36.5% ($r^2 = 0.59$; $p < 0.01$), from 17,327 in 1997 to 10,994 in 2010. The proportion of vaginal hysterectomies decreased by 29.7% ($r^2 = 0.72$; $p < 0.01$), from 2858 in 1997 to 2010 in 2010.**Conclusion:** As in most Western countries, hysterectomy rates in Taiwan declined by year. There was a marked shift in the types of hysterectomies from 1997 through to 2010 in Taiwan. Minimally invasive surgeries and supracervical hysterectomies were more commonly adopted.Copyright © 2016, Taiwan Association of Obstetrics & Gynecology. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

There is considerable variation in the policy concerning hysterectomy in healthcare centers of various countries. Hysterectomy

is the second most common gynecological procedure performed in the United States, where the crude rate of hysterectomy performed annually rose from 386.9 procedures per 100,000 women in 1998 to a peak of 465.3 procedures per 100,000 women in 2002 [1]. However, during the period 2002–2010, the annual rate of hysterectomy declined yearly to 275.8 per 100,000 women in 2010 [2]. The rates of hysterectomies differ considerably between countries. The report from the Organization for Economic Co-operation and Development (OECD) in 2013 stated that the age-standardized rates of hysterectomies ranged from 105 per 100,000 females in

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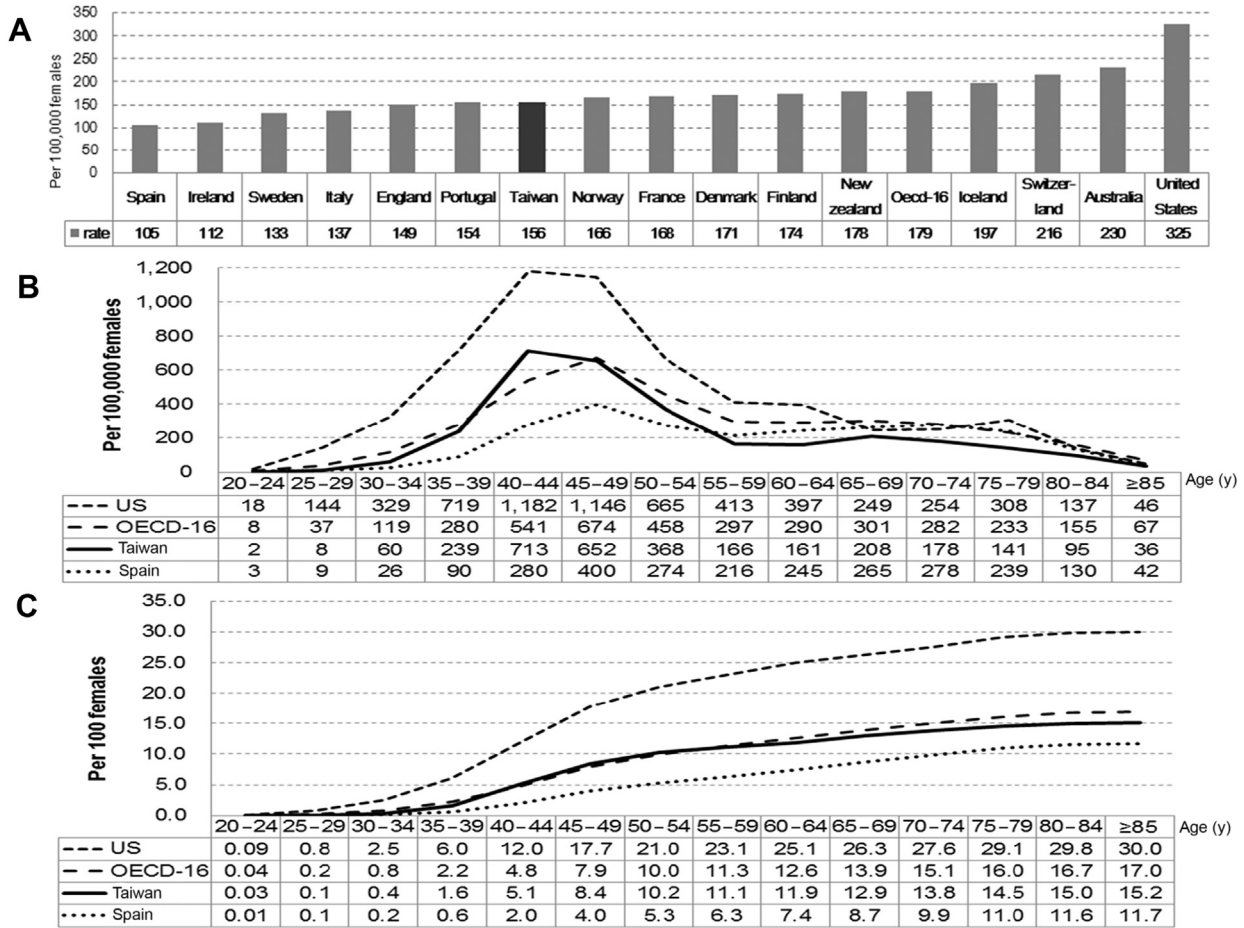


Figure 1. (A) Age-standardized rates of hysterectomy per 100,000 females in 2008. (B) Age-specific rates for hysterectomy per 100,000 females in 2008. (C) Cumulative risks of hysterectomy (%) by age in 2008.

Spain in 2008 to 366 per 100,000 females in the United States in 2004. The estimated likelihood for a woman to undergo a hysterectomy by the age of 65 years in 2008 was reported to be 14.5% in Iceland, 15.1% in Switzerland, 16.1% in Australia, and 23.8% in the United States [3]. In Taiwan, the earlier report indicated that the crude rate of hysterectomy declined from 243.4 per 100,000 women in 1999 to 197.2 per 100,000 women in 2005 [4].

Hysterectomy involves either abdominal or vaginal procedures, and can be subcategorized into abdominal hysterectomy, vaginal hysterectomy (VH), and laparoscopic hysterectomy (LH). Abdominal hysterectomy can further be divided into total abdominal hysterectomy (TAH) and subtotal or supracervical abdominal hysterectomy (STAH). LH can also be divided into laparoscopically assisted vaginal hysterectomy, total laparoscopic hysterectomy (TLH), and laparoscopic supracervical hysterectomy (LSH). Laparoscopically assisted vaginal hysterectomy is performed with laparoscopic assistance, and in TLH the vaginal vault is sutured laparoscopically [5]. For women undergoing LSH, the cervix and attached ligaments remain intact [6,7]. A recent study in the United States reported that hysterectomies were performed via an abdominal approach in 64.6% cases, followed by a vaginal approach in 20.2% and the laparoscopic route in 13.1% cases [2]. With the advancement of techniques and instruments, minimally invasive procedures with laparoscopic assistance have widely been adopted with increased utilities in many countries; nevertheless, there are variations in surgical modalities of hysterectomy. Additionally,

studies on the rates and types of hysterectomies in Taiwan remain scarce over the past 10 years [3,4]. The present study used the population-based National Health Insurance (NHI) database to investigate the utilization of hysterectomy in Taiwan from 1997 through to 2010; moreover, these results are compared with those from 16 OECD countries (OECD-16).

Materials and methods

Data source

The Taiwan NHI Administration has collected claims records covering the inpatient and outpatient medical benefit claims of almost the entire population of Taiwan since the inception of its single-payer NHI program in 1995. In 2005, the NHI covered 22.72 million enrollees, nearly 99% of the population in Taiwan. The entire data collection is known as the NHI Research Database. The NHI is primarily financed by payroll taxes, with additional subsidies from general government revenues. Claims data in the NHI Research Database contain information on all NHI-reimbursed hospital discharges including dates of admission and discharge, one major and four minor diagnosis codes [based on the International Classification of Diseases, 9th revision, Clinical Modification (ICD-9-CM)], and one major and four minor surgery codes. Confidentiality assurances were addressed by abiding by the data regulations of the NHI Bureau, and the Institutional Review Board of the National Taiwan

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