

109 年

人工生殖施行結果分析報告

The Assisted Reproductive

Technology Summary

2020 National Report of Taiwan

衛生福利部國民健康署

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凡 例

- 一、人工生殖資料庫於民國 87 年建立，由各人工生殖機構定期通報期間內於其機構接受人工生殖（但不含配偶間的人工授精）之個案資料。
- 二、本報告係依據人工生殖機構所通報之個案資料進行統計分析，報告內容以圖表為主，以文字說明為輔。
- 三、所稱「年」，係為個案接受人工生殖「開始使用排卵藥物」或「開始進入治療週期」的日期介於 109 年 1 月 1 日至 109 年 12 月 31 日之期間，即使懷孕與活產分析亦同。
- 四、「年齡」之統計係以「足歲」計算，亦即未滿 35 歲（如：34 歲又 9 個月）列入 34 歲年齡層計算。
- 五、同時植入「新鮮胚胎」與「冷凍胚胎」之週期，於胚胎種類分析時，列為「新鮮胚胎」類別計算。
- 六、報告除印製成冊，另刊登於本署網站；87 年至 109 年之報告亦可於網站中參考。
(本署網站：<http://hpa.gov.tw>)



Guide to the Report

1. The assisted reproduction database of Taiwan was established in 1998 and has been periodically updated with assisted reproduction (excluding data for artificial insemination using husband's semen) case data reported from each assisted reproduction institution in Taiwan.
2. This report is based on the results of a statistical analysis conducted on case data received from various assisted reproduction institutions. Details of the report are expressed in graphs with a corresponding text explanation.
3. The term “year” herein refers to the period between January 1st and December 31st of 2020 in which the case had received assisted reproductive technology; that is, covering the “date of initiating the use of the fertility drug” or the “date of initiating the treatment cycle”. The period so defined shall be applied to pregnancy and live birth analyses as well
4. “Age” statistics in the report refer to the “full age”; for example, a subject who is 34 years and 9 months old shall be categorized and calculated in the age group of 34 years.
5. Cycles of in which fresh and frozen embryos are simultaneously transferred shall be categorized and calculated as “fresh embryos”.
6. In addition to this publication, this report is also posted on the Health Promotion Administration, Ministry of Health and Welfare website where reports from 1998 to 2020 are also available.
(website: <http://www.hpa.gov.tw>)



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第一章 總論

為健全人工生殖之發展，保障不孕夫妻、人工生殖子女與捐贈人之權益，維護國民之倫理及健康，於 96 年 3 月 21 日公布施行人工生殖法。依據該法第 27 條規定，人工生殖機構應通報受術人次、成功率、不孕原因，以及所採行之人工生殖技術等相關事項，由主管機關建立人工生殖資料庫管理，並定期進行統計分析公布資料。

我國人工生殖業務及資料庫之管理，自民國 84 年起即陸續訂定相關辦法規範。人工生殖機構在 87 年初共有 48 家，截至 111 年 7 月止，通過許可之醫療機構共有 95 家。醫療機構應依人工生殖法之規定，須申請主管機關許可後，始得實施人工生殖、接受生殖細胞之捐贈、儲存或提供之行為，為維護醫療機構施行人工生殖技術之醫療品質，本署並定期辦理人工生殖機構之許可審查。

本報告針對 109 年於 93 家人工生殖機構接受治療之個案進行統計分析。因應 110 年 7 月 1 日起政府實施「體外受精（俗稱試管嬰兒）人工生殖技術補助方案」，擴大補助對象，除第一章簡介人工生殖的方法與治療週期之涵義，及第二章以所有治療週期為統計，包含配偶間的人工生殖資料以及接受精卵捐贈者之資料，維持歷年分析架構外，調整第三章，特別針對本國籍的人工生殖進行分析。第四章特針對 87 年至 109 年的趨勢進行分析。



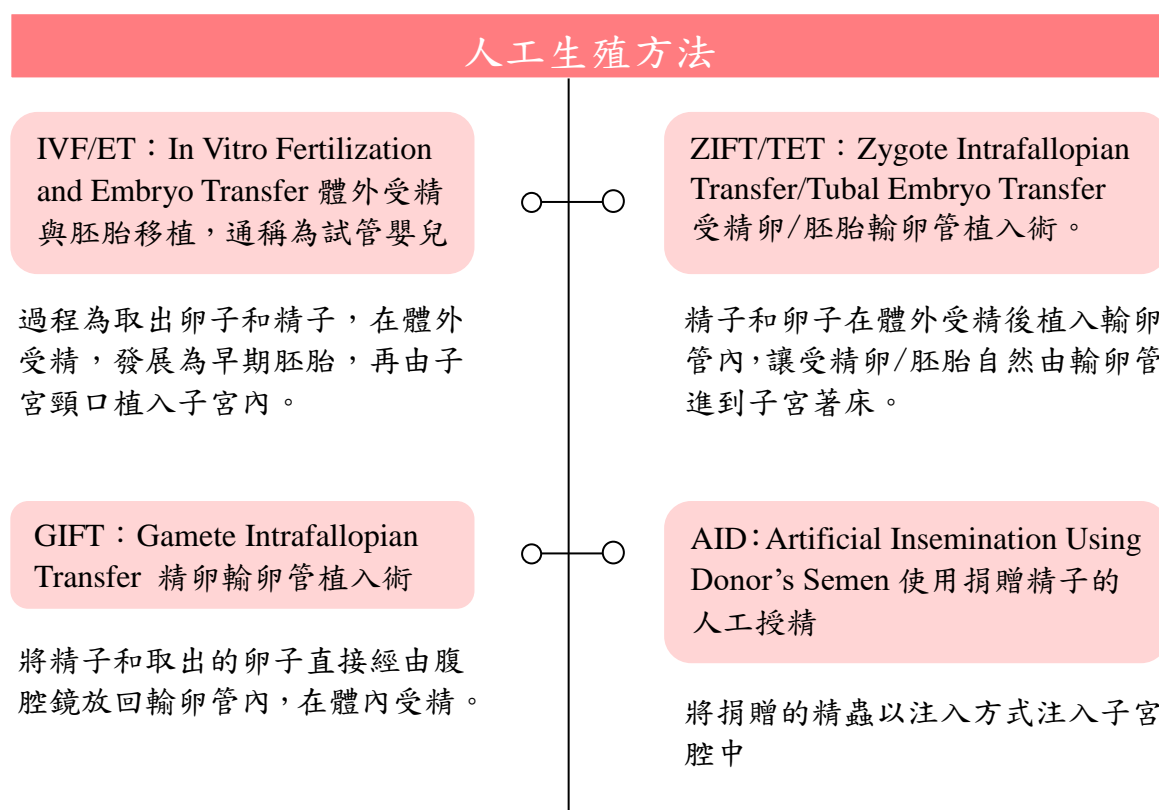
第一節、人工生殖治療週期

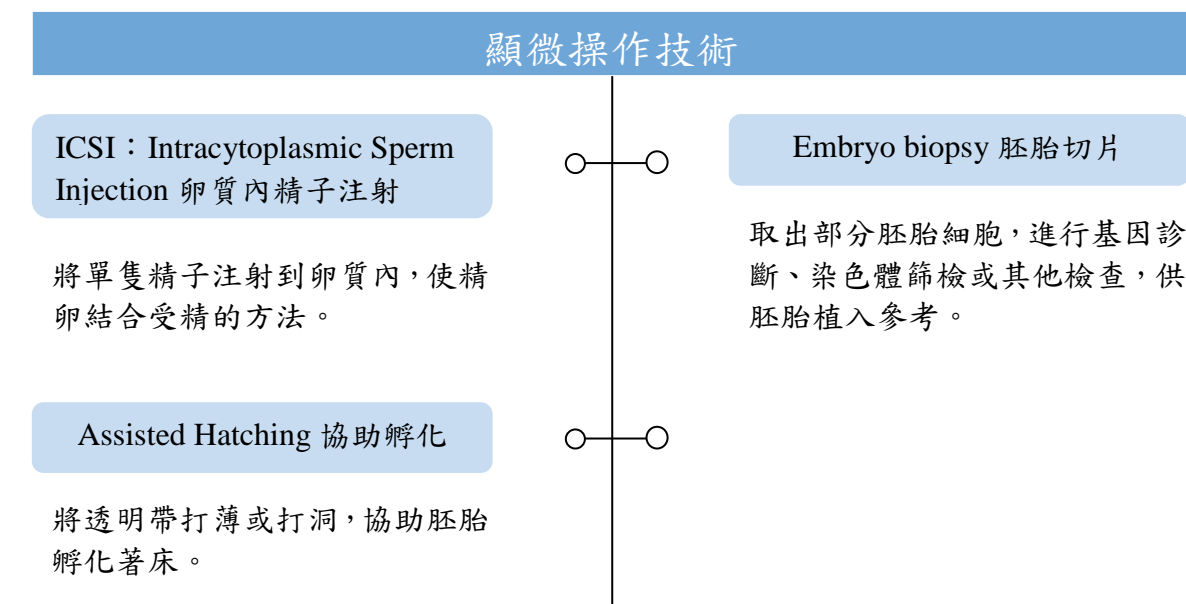
茲因人工生殖包含長達近兩週或更久的數個步驟，故於資料分析時以「週期 (cycle)」為單位考量會比單一時間點的考量要來得妥切。以這種方式計算，在統計分析時，同一對接受人工生殖治療之夫妻將可能貢獻一個或一個以上的週期。

當個案開始使用排卵藥物以刺激排卵，或為了胚胎的植入而開始進行檢查時，即為週期計算開始，而其最終目標在於順利生產健康之嬰兒，然而並非所有接受治療之週期都能順利的懷孕並持續到生產，但仍會被列於治療週期個案統計。

第二節、人工生殖的技術

本節針對人工生殖技術 (Assisted Reproductive Technology, ART) 所呈現的幾種人工生殖方法及顯微操作技術進行說明。





依人工生殖法第 5 條之規定，以取出夫之精子植入妻體內實施之配偶間人工授精(Artificial Insemination Using Husband's Semen, AIH)，除第 16 條第 3 款規定禁止選擇胚胎性別及其違反之處罰規定外，不適用人工生殖法之規定。此類配偶間人工授精的治療不侷限於人工生殖機構，個案資料不需通報，因此本文所稱人工生殖個案以及所有分析數據均不包含以 AIH 方式執行之人工生殖。

第二章 所有治療週期之統計

本文所列的資料期間，均以週期開始的時間點為計算基準。所使用的分析資料係來自 109 年的 93 家人工生殖機構定期通報的資料。

第一節、治療週期數

109 年人工生殖之週期（含未完成取卵或植入之週期）共有 38,289 週期（表 1）。36,339 週期為配偶間人工生殖（占 94.9%），1,950 週期為使用捐贈精卵人工生殖（占 5.1%）。

表 1 109 年人工生殖治療週期類別

單位：週期	
週期類別	人工生殖治療週期數
使用捐贈精卵	1,950
使用捐精	351
使用捐卵	1,599
使用配偶精卵	36,339
全部治療週期	38,289

第二節、接受人工生殖治療者之年齡

在所有接受治療之受術妻中，其年齡介於 35 歲到 39 歲之間占最多數，為 38.4% (表 2)，其中，又以 38 歲、40 歲的婦女接受人工生殖治療週期最多，皆各占所有治療週期之 8.2%，其次為 39 歲婦女，占所有治療週期之 7.8%。另使用捐卵受術妻之年齡分布如表 3，以 40-44 歲最多，占 35.9%。

表 2 109 年人工生殖受術妻之年齡別

受術妻年齡	治療週期數	單位：週期/%
		百分比
<25	135	0.3
25-29	1,436	3.8
30-34	7,620	19.9
35-39	14,672	38.4
40-44	11,801	30.8
45-49	2,419	6.3
≥50	206	0.5
全部治療週期	38,289	100.0

表 3 109 年人工生殖使用捐卵受術妻之年齡別

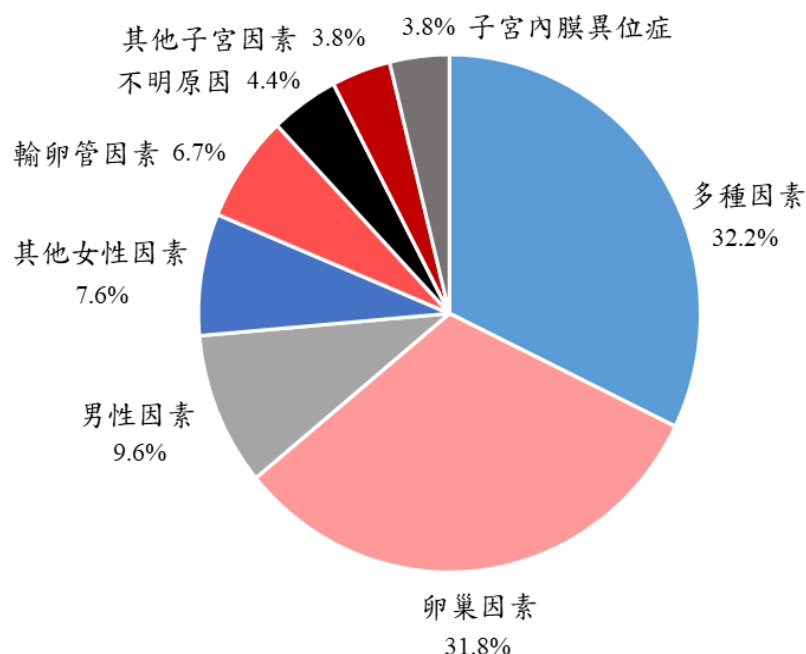
受術妻年齡	治療週期數	單位：週期/%
		百分比
<25	0	0
25-29	17	1.1
30-34	92	5.8
35-39	214	13.4
40-44	576	35.9
45-49	544	34.0
≥50	156	9.8
使用捐卵治療週期	1,599	100.0

第三節、不孕原因分析

人工生殖治療個案不孕之原因可能是先天、後天或外在環境所導致，不孕原因以疾病分類所占比例如圖 1，其中以多種因素所占比例 32.2% 為最高，卵巢因素 31.8% 占第二位，男性因素 9.6% 居第三位(圖 1)，其中男性不孕原因包含性腺刺激素缺乏、睪丸功能衰退、輸送精子管道阻塞及性功能障礙等。

圖 1 109 年人工生殖個案不孕之原因

(母數：38,289 治療週期數)



第四節、使用人工生殖方法

所有人工生殖治療方法中，以使用試管嬰兒方法的比例為最多，占 99.96%，其餘方法含 GIFT、ZIFT/TET 及 AID 等方法之比例均不超過 1%。對於試管嬰兒這種多數週期所選擇使用的人工生殖治療方法，將在第三章第二節中，特別針對本國籍使用試管嬰兒的治療情形與懷孕結果進行討論。

第五節、顯微操作技術

人工生殖 38,289 治療週期中，78.0%週期有使用顯微操作技術(表 4)。

表 4 109 年人工生殖個案治療週期之使用顯微操作技術情形

顯微操作使用情形	治療週期數	單位：週期/%
		百分比
使用	29,863	78.0
卵質內精子注射(ICSI)	15,053	39.3
協助孵化(Assisted Hatching)	11,253	29.4
胚胎著床前染色體篩檢(PGT-A)	964	2.5
胚胎著床前基因診斷(PGT-M)	85	0.2
其他(含合併多種技術)	2,508	6.6
未使用	8,426	22.0
全部治療週期	38,289	100.0

第六節、植入週期數與胚胎數

人工生殖植入週期數共 20,228 週期，有 20.9%採用配偶間的精卵所形成的新鮮胚胎，73.0%使用配偶間的冷凍胚胎，0.6%使用捐贈精卵形成的新鮮胚胎，5.5%使用捐贈精卵的冷凍胚胎(表 5)。

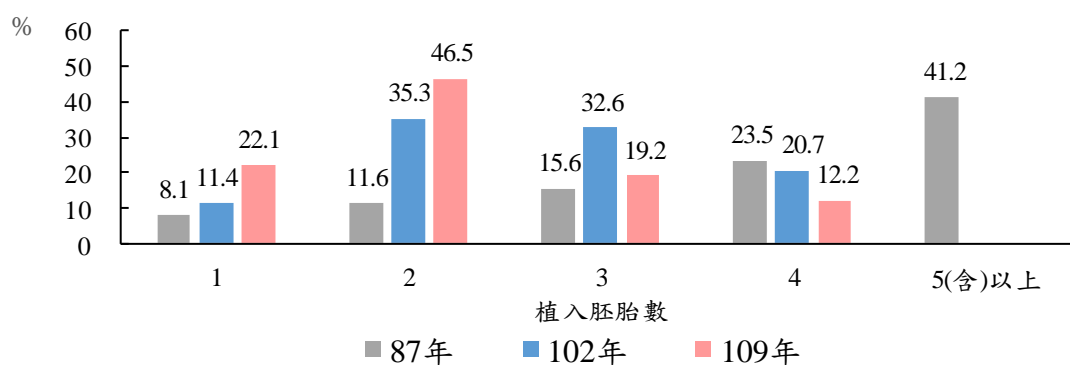
表 5 109 年人工生殖植入類型百分比

植入類型	植入週期數	單位：週期/%
		百分比
配偶間	18,990	93.9
新鮮	4,218	20.9
冷凍	14,772	73.0
捐贈精卵	1,238	6.1
新鮮	129	0.6
冷凍	1,109	5.5
全部植入週期	20,228	100.0

為使人工生殖機構在植入胚胎數方面有所依循，避免植入過多胚胎，造成雙胞胎或多胞胎的機率增加，不僅成為家庭經濟的負擔，也將影響社會人口之結構，96 年公布施行之人工生殖法中，即明定機構實施人工生殖時，每次植入 4 個以下之胚胎為之，明確限縮胚胎的植入數目，且訂有相關罰則。另多胞胎妊娠其生產風險較單胎高，為達母嬰均安，103 年修訂人工生殖機構許可辦法，將「未滿 35 歲之植入 2 個以下胚胎之比率」納入監測指標之一。

109 年人工生殖治療週期植入 2 個以下胚胎者占全部植入胚胎週期數 68.6%(108 年為 72.7%，107 年為 69.5%)(圖 2)。109 年人工生殖機構通報之卵巢過度刺激症候群輕、中及重度占治療週期數比率分別為 2.72%、0.11% 及 0.02% (表 6)。

圖2 人工生殖胚胎植入數百分比



註：96 年公布施行之人工生殖法中，即明定機構實施人工生殖時，每次植入 4 個以下之胚胎為之。

表6 109年卵巢過度刺激症候群週期數
(母數：38,289 治療週期)

程度	單位：週期/%	
	治療週期數	百分比
輕度	1,040	2.72
中度	42	0.11
重度	9	0.02
全部治療週期	1,091	2.85

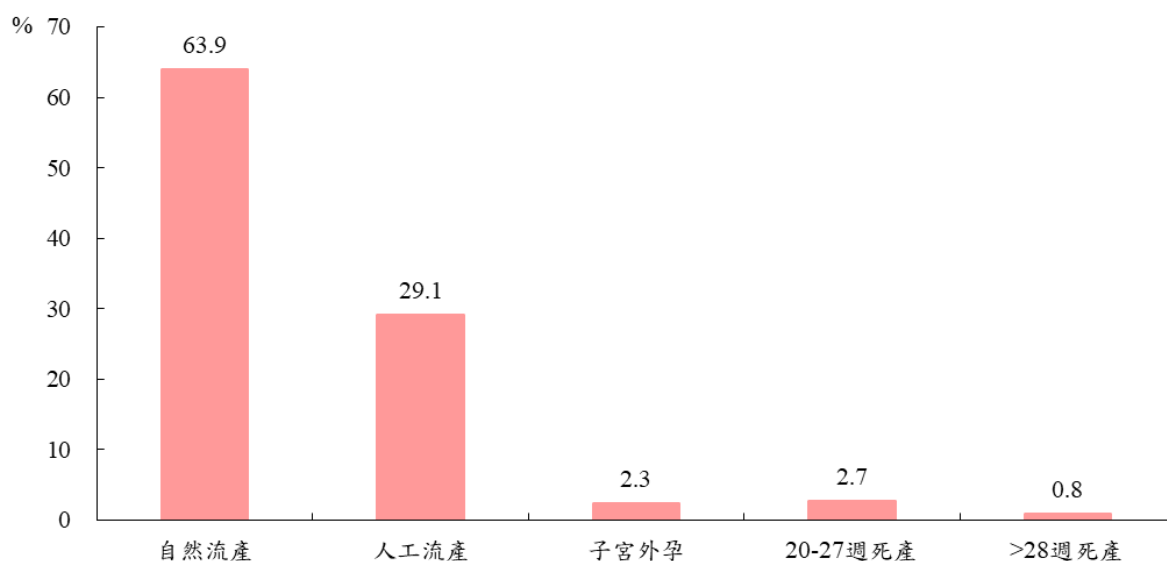
第七節、懷孕與活產情形

人工生殖 38,289 治療週期中，有植入的計 20,228 週期，有懷孕的計 9,663 個週期，有減胎的計 135 週期，有活產的計 7,188 週期，共有 8,944 個嬰兒誕生(24.1%活產週期為多胎生產)，較 108 年減少了 1,734 個嬰兒誕生。

在 2,475 個懷孕但無活產紀錄之週期中，1,582 週期為自然流產（占 63.9 %），720 週期為人工流產(含 20 週前無胎心音；占 29.1%)，58 週期為子宮外孕(占 2.3%)，88 週期為死產(占 3.5%)(少數週期同時具有自然流產、人工流產、子宮外孕、20-27 週死產或>28 週死產中兩種以上情形)(圖 3)。

圖 3 109 年人工生殖懷孕週期無活產紀錄分析

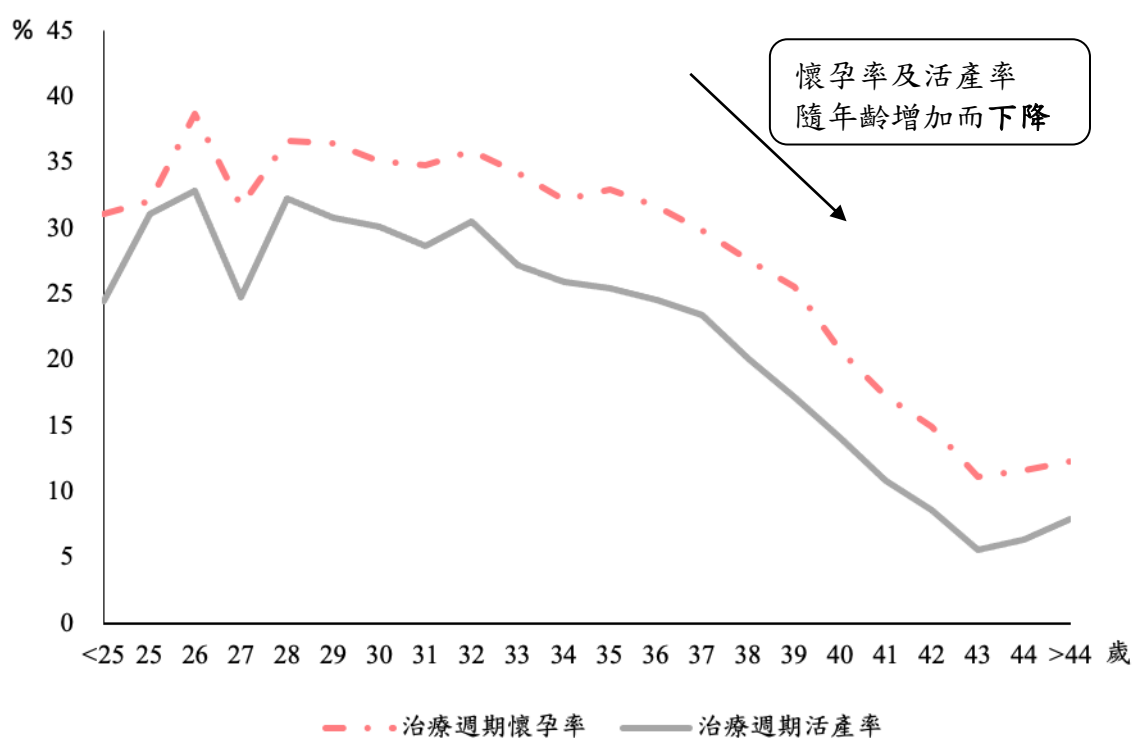
(母數：2,475 懷孕但無活產之週期)



109年接受人工生殖之治療週期懷孕率為25.2%，治療週期活產率為18.8%（須注意：若採取全部胚胎冷凍合併解凍胚胎植入，則冷凍胚胎及解凍胚胎植入各算一個治療週期，這有可能導致上述懷孕率及活產率之低估）。而受術妻年齡與懷孕率及活產率關係如圖4，年齡小於25歲和年齡大於44歲的部分，由於週期數過少，故未再細分年齡層，採合併計算方式統計，34歲以後，懷孕率與活產率隨著接受治療者女性的年齡增加而下降。

圖4 109年人工生殖受術妻年齡與懷孕率及活產率關係圖

（母數：38,289 治療週期數）



本節另外再針對人工生殖的成功率、懷孕結果及其相關問題分析。

七種成功率分析

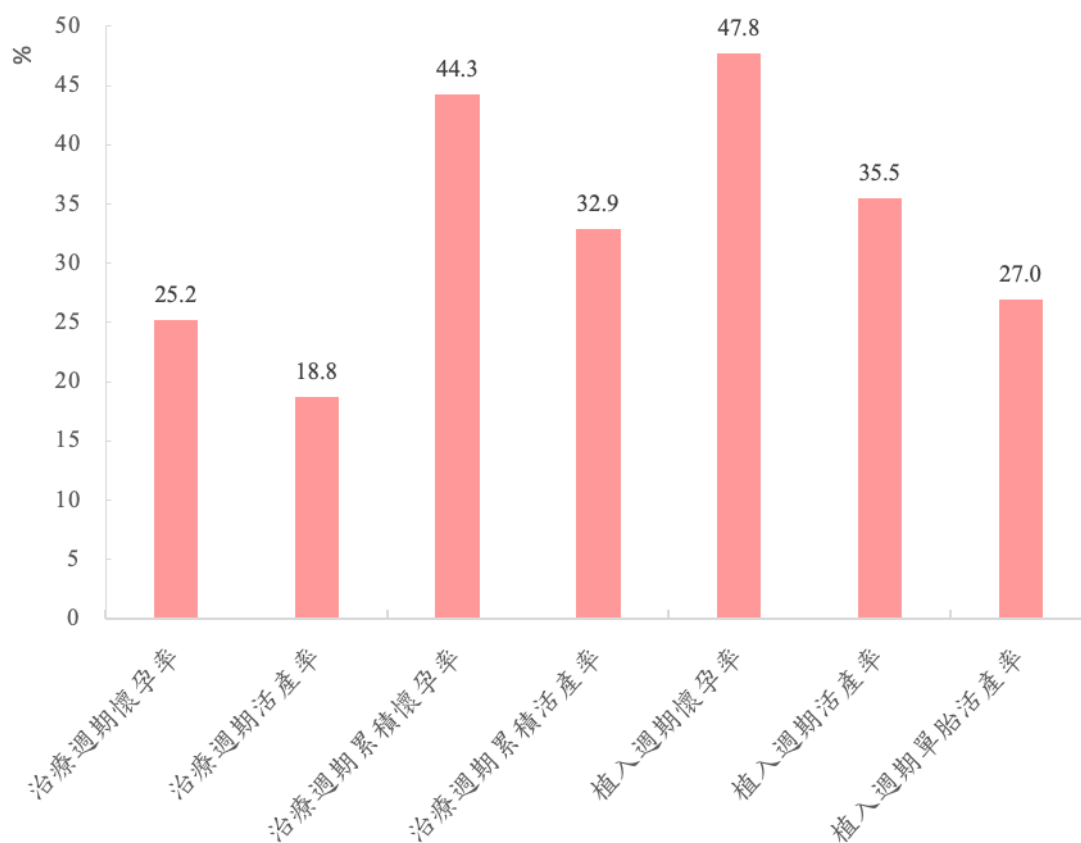
因近年人工生殖技術成熟，越來越多進行全胚冷凍，使得治療週期數增加，但該週期並未進行植入，故以治療週期累積懷孕率、治療週期累積活產率較能真實呈現人工生殖技術的品質。

圖 5 以七種測量方式呈現人工生殖之成功率，包括：治療週期懷孕率、治療週期活產率、治療週期累積懷孕率、治療週期累積活產率、植入週期懷孕率、植入週期活產率與植入週期單胎率等，分別描述如下：

1. 治療週期懷孕率：此率為一般所稱的「懷孕率」。意指人工生殖治療週期中，有懷孕的週期之百分比。由於部分懷孕結果會產生流產、死產等結果，因此，此率會高於治療週期活產率。109 年之治療週期懷孕率為 25.2%。
2. 治療週期活產率：此率為一般所稱的「活產率」，指人工生殖治療週期中，有活產的週期之百分比（不論生產單胎或多胎，均只視為一次活產）。這是大多數人較關心的比率，因為它呈現了以人工生殖方法得到活產嬰兒的機會。109 年治療週期活產率為 18.8%。
3. 治療週期累積懷孕率：意指人工生殖治療週期中，每次取卵週期有懷孕之百分比，計算公式：
$$\frac{\text{新鮮胚胎懷孕週期數} + \text{冷凍胚胎懷孕週期數}}{\text{新鮮胚胎治療週期數} + (\text{新鮮胚胎} + \text{冷凍胚胎})\text{懷孕週期數}}$$
。109 年之治療週期累積懷孕率為 44.3%。
4. 治療週期累積活產率：指人工生殖治療週期中，每次取卵週期有活產之百分比（不論生產單胎或多胎，均只視為一次活產），計算公式：
$$\frac{\text{新鮮胚胎活產週期數} + \text{冷凍胚胎活產週期數}}{\text{新鮮胚胎治療週期數} + (\text{新鮮胚胎} + \text{冷凍胚胎})\text{活產週期數}}$$
。109 年之治療週期累積活產率為 32.9%，未滿 38 歲前治療週期累積活產率則為 51.6%。

5. 植入週期懷孕率：人工生殖有植入的週期中，其懷孕週期之百分比。109 年植入週期懷孕率為 47.8%。其中，植入新鮮胚胎的懷孕率為 39.1%，而植入冷凍胚胎的懷孕率為 50.1%。
6. 植入週期活產率：人工生殖有植入的週期中，其活產週期之百分比。109 年植入週期活產率為 35.5%，其中，植入新鮮胚胎的活產率為 27.4%，而植入冷凍胚胎的活產率為 37.7%。
7. 植入週期單胎活產率：人工生殖有植入的週期中，單胎活產的週期百分比。單胎的活產是人工生殖技術成功的一項重要測量值，因為與多胎生產比較起來，單胎生產在新生兒健康方面有較低的風險，這些可能風險包括：早產、低體重、缺陷和死亡。109 年之植入週期單胎活產率為 27.0%。

圖 5 109 年人工生殖成功率分析



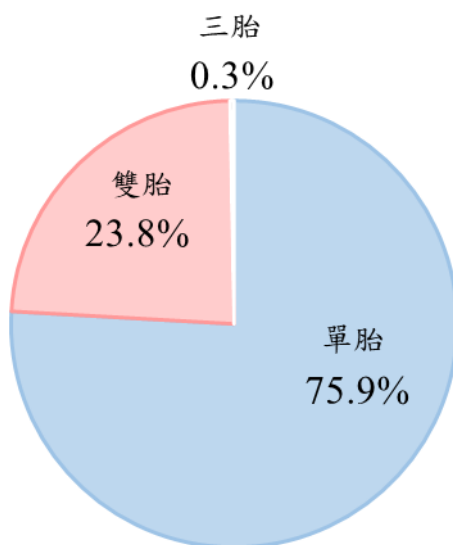
第八節、出生嬰兒狀況

一、活產胎數

在 7,188 個活產週期中，75.9%為單胎生產、23.8%為雙胎生產、0.3%為三胎生產（圖 6）。

於 109 年間接受人工生殖治療後，生產的嬰兒共有 8,944 人。其中，男嬰有 4,395 人，女嬰有 4,549 人(表 7)。

圖 6 109 年人工生殖活產週期之胎數百分比
(母數：7,188 活產週期)



二、體重、懷孕週數與先天缺陷

觀察 8,944 個活產嬰兒中，出生體重低於 1,500 公克者占所有活產嬰兒總數之 3.9%，體重介於 1,500-2,499 公克者占 29.8%，體重大於等於 2,500 公克者占 66.3%；另懷孕週數小於 37 週者占所有活產嬰兒週期之 35.6%，週數介於 37-41 週者占 64.3%，大於等於 42 週者占 0.1%(表 7)；而外觀明顯先天缺陷的嬰兒比率為 1.0%，出生體重<1500 公克與≥2500 公克的先天缺陷率分別為 5.1%與 0.6% (表 8)。

表 7 109 年人工生殖出生嬰兒體重及週數 (活產嬰兒總數 8,944 個)

		單位：數量/%	
嬰兒狀況	活產嬰兒數	百分比	
性別			
男	4,395	49.1	
女	4,549	50.9	
體重			
<1500 公克	351	3.9	
1500-2499 公克	2,666	29.8	
≥2500 公克	5,927	66.3	
懷孕週數			
<37 週	3,182	35.6	
37-41 週	5,757	64.3	
≥42 週	5	0.1	
合計	8,944	100.0	

表 8 109 年人工生殖出生嬰兒外觀明顯先天缺陷占活產嬰兒比率及與出生體重的關係 (活產嬰兒總數 8,944 個)

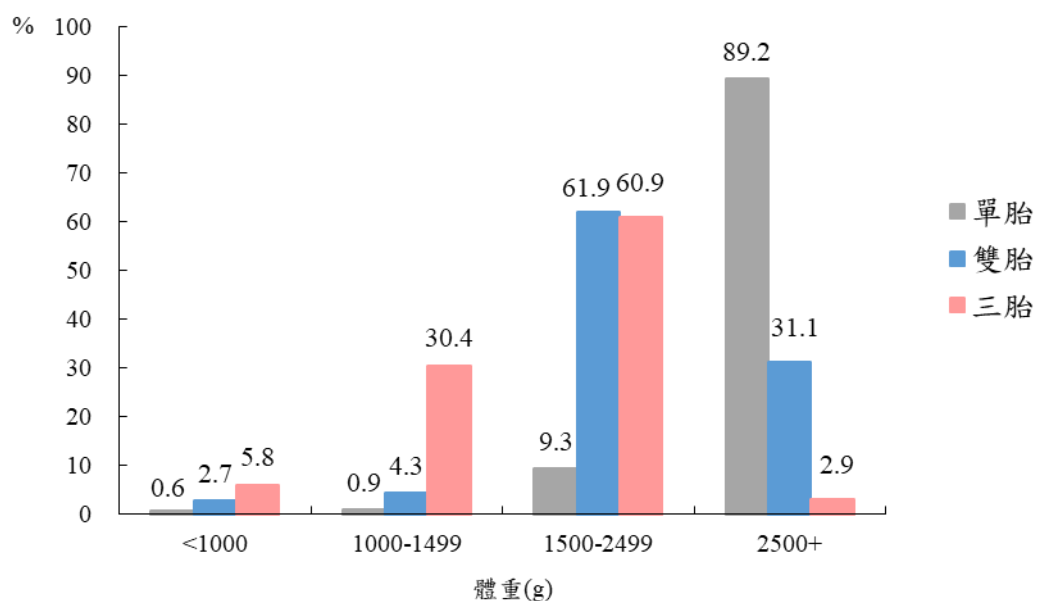
		單位：數量/%	
出生體重	外觀明顯先天缺陷 嬰兒數	活產嬰兒數	百分比
<1500 公克	18	351	5.1
1500-2499 公克	37	2,666	1.4
≥2500 公克	35	5,927	0.6
合計	90	8,944	1.0

三、胎數別與體重之關係

單胎生產中，體重大都超過 2,500 公克，佔所有單胎生產之 89.2%。雙胎生產則以 1,500 到 2,499 公克新生兒佔 61.9%，為最大比例，其次為 2,500 公克以上者佔 31.1%。而三胎生產中，體重小於 1,000 公克新生兒佔 5.8%，體重介於 1,000 到 1,499 公克者佔 30.4%，體重在 1,500 到 2,499 新生兒佔 60.9%，體重超過 2,500 公克者佔 2.9%。檢定結果顯示胎數與嬰兒體重之間呈現負相關 ($P<0.0001$)，亦即胎數愈多，愈易產生低體重兒(圖 7)。

圖 7 109 年人工生殖活產週期之胎數別與體重之關係百分比

(母數：8,944 個活產嬰兒)



第三章 本國籍人工生殖

第一節、本國籍人工生殖情形

受術夫妻其中一方為本國籍即納入本國籍分析，排除受術夫妻皆為外國籍者。本節統計本國籍之受術夫妻利用各種治療方法進行人工生殖之情形（包括使用配偶精卵及一方使用捐贈精卵，但不包括配偶間的人工授精 AIH 資料）。

一、年齡分布

109 年人工生殖 38,289 治療週期中，本國籍人工生殖治療週期共 37,499 週期，占 97.9%，其中 35,833 治療週期為使用配偶精卵者(占 95.6%)，1,666 週期為使用捐贈精卵者（占 4.4%）（表 9）。其受術妻年齡分布如表 10，與所有接受人工生殖治療者之年齡分布（表 2，第 5 頁）型態相似。

表 9 109 年本國籍人工生殖治療週期類別

週期類別	單位：週期	
	人工生殖治療週期數	百分比
使用捐贈精卵	1,666	4.4
使用捐精	316	0.8
使用捐卵	1,350	3.6
使用配偶精卵	35,833	95.6
全部治療週期	37,499	100

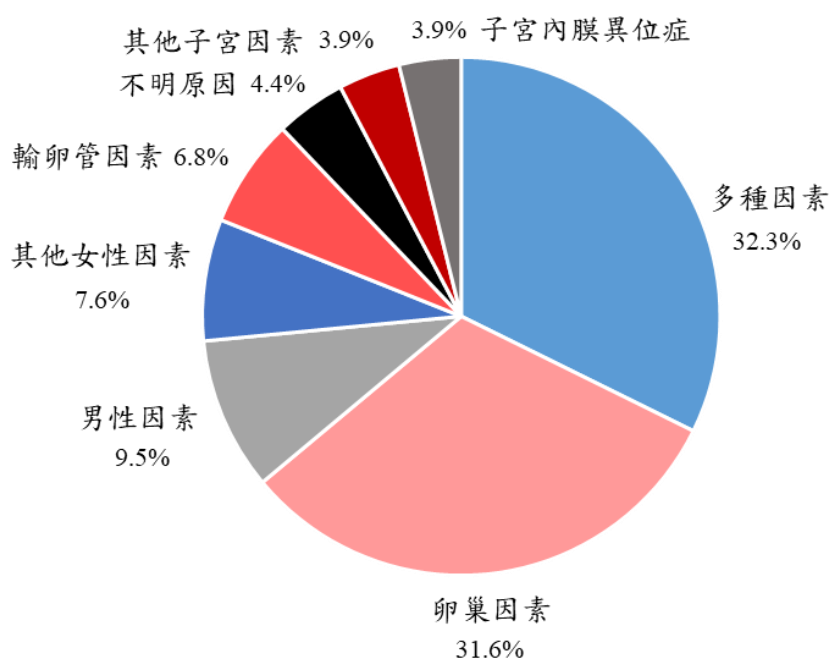
表 10 109 年本國籍人工生殖受術妻之年齡別

受術妻年齡	單位：週期/%	
	治療週期數	百分比
<25	130	0.3
25-29	1,388	3.7
30-34	7,443	19.9
35-39	14,442	38.5
40-44	11,568	30.9
45-49	2,340	6.2
≥50	188	0.5
全部治療週期	37,499	100.0

二、不孕原因分析

不孕原因如圖 8，其中以多種因素所占比例 32.3%為最高，卵巢因素 31.6%占第二位，男性因素 9.5%居第三位。與所有接受人工生殖治療者之不孕原因分布（圖 1，第 6 頁）相似。

圖 8 109 年本國籍人工生殖個案不孕之原因（母數：37,499 治療週期數）



三、植入週期數與胚胎數

本國籍人工生殖植入週期數共 18,894 週期，有 19.3%採用配偶間的精卵所形成的新鮮胚胎，75.2%使用配偶間的冷凍胚胎，0.6%使用捐贈精卵形成的新鮮胚胎，4.9%使用捐贈精卵的冷凍胚胎(表 11)。

表 11 109 年本國籍人工生殖植入類型百分比

植入類型	植入週期數	百分比
配偶間	17,859	94.5
新鮮	3,650	19.3
冷凍	14,209	75.2
捐贈精卵	1,035	5.5
新鮮	110	0.6
冷凍	924	4.9
全部植入週期	18,894	100

四、懷孕與活產情形

本國籍人工生殖 37,499 治療週期中(包含使用配偶精卵與捐贈精卵)，有懷孕的計 8,836 個週期，有減胎的計 122 週期，有活產的計 6,551 週期，共有 8,164 個嬰兒誕生。

五、出生嬰兒狀況

在本國籍人工生殖 6,551 個活產週期中，68.8%為單胎生產、30.8%為雙胎生產、0.4%為三胎生產。生產的嬰兒共有 8,164 人。其中，男嬰有 4,005 人，女嬰有 4,159 人。

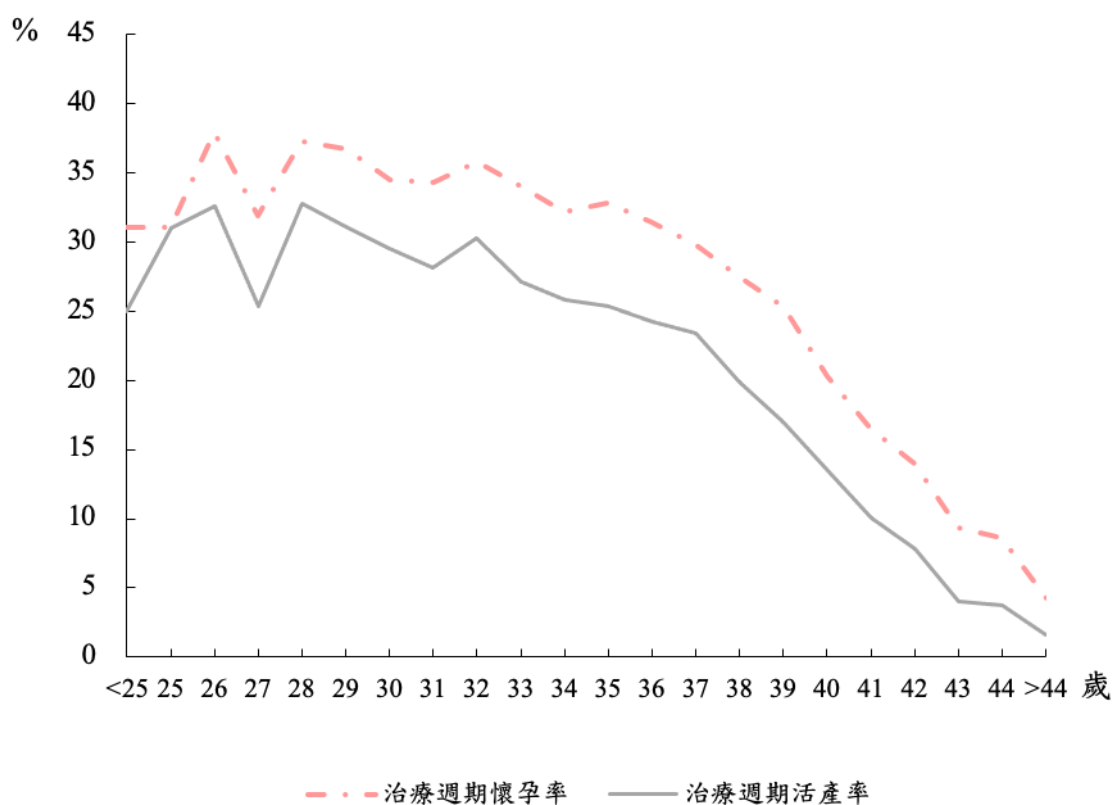
第二節、本國籍配偶間之人工生殖

本節針對本國籍使用配偶精卵之人工生殖施行試管嬰兒(IVF/ET)方式進行分析。

一、本國籍使用配偶間精卵之各年齡懷孕率、活產率

本國籍使用配偶精卵之人工生殖治療週期數為 35,833 週期，懷孕率為 24.7%，治療週期活產率為 18.3%(須注意：若採取全部胚胎冷凍合併解凍胚胎植入，則冷凍胚胎及解凍胚胎植入各算一個治療週期，這有可能導致上述懷孕率及活產率之低估)，而受術妻年齡與懷孕率及活產率關係在 34 歲以後，隨著年齡之增加而下降；年齡小於 25 歲和年齡大於 44 歲的部分，由於週期數過少，故未再細分年齡層，採合併計算方式統計(圖 9)。

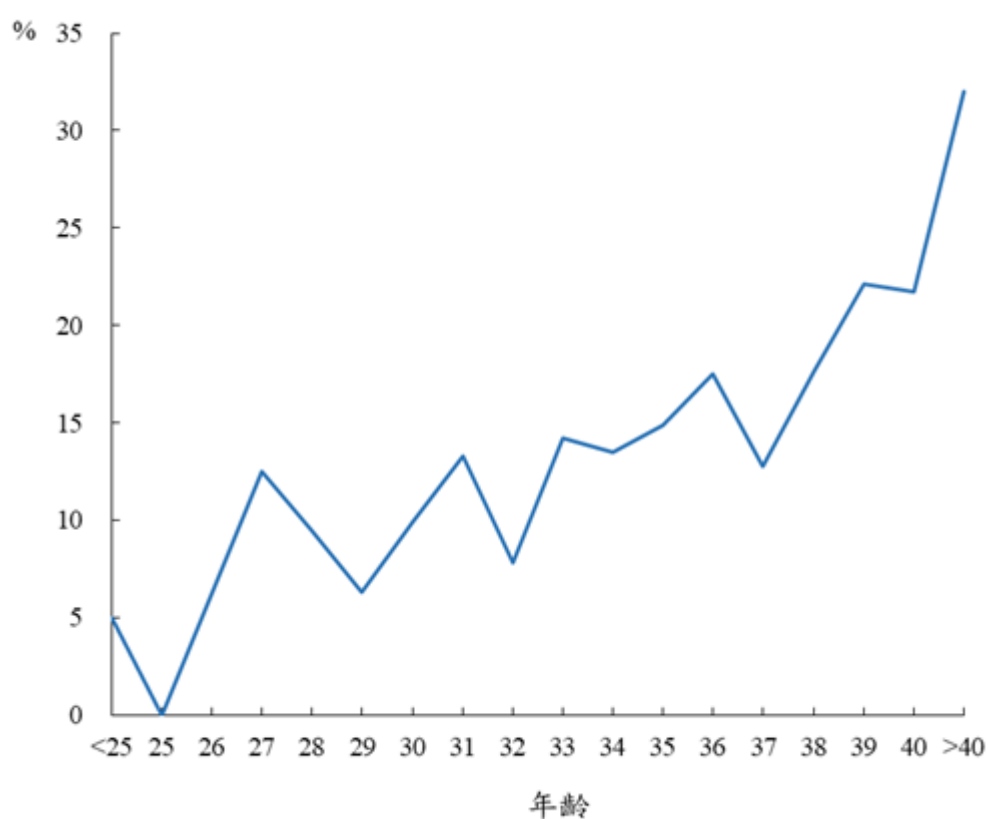
圖 9 109 年本國籍使用配偶精卵之人工生殖受術妻年齡與懷孕率及活產率關係
(母數：35,833 治療週期數)



二、本國籍使用配偶間精卵之各年齡流產率

本國籍使用配偶精卵之人工生殖植入胚胎懷孕後，受術妻年齡與自然流產率之關係，34 歲以後，自然流產率隨年齡增加而增加，年齡大於 40 歲的平均自然流產率為 32.0%(圖 10)。

圖 10 109 年本國籍使用配偶精卵之人工生殖植入胚胎懷孕後受術妻年齡與自然流產率關係 (母數：8,418 本國籍使用配偶精卵之植入胚胎懷孕週期數)

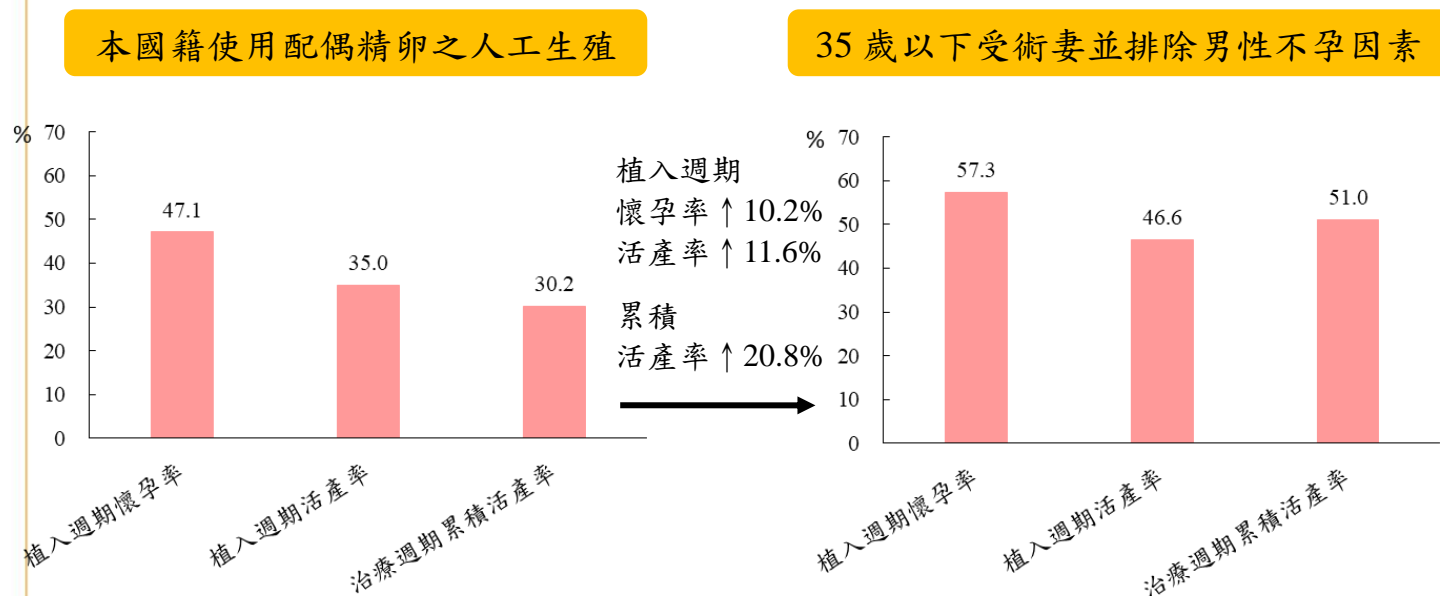


三、懷孕率與活產率

本國籍使用配偶精卵之人工生殖 35,833 治療週期中，其植入週期共 17,859 週期，有懷孕的計 8,418 週期，有活產的計 6,250 週期。其植入週期懷孕率為 47.1%，植入週期活產率為 35.0%，治療週期累積活產率為 30.2% (未滿 38 歲治療週期累積活產率為 48.9%)，其中單胎比例占 75.2%，雙胞胎占 24.4%，三胞胎則占 0.4%。

若針對 35 歲以下受術妻，排除男性因素而不孕的個案，其植入週期懷孕率提高到 57.3%，植入週期活產率提高到 46.6%，而治療週期累積活產率提高到 51.0%(圖 11)。

圖 11 109 年本國籍使用配偶精卵之人工生殖與排除男性不孕因素之 35 歲以下受術妻施行試管嬰兒之成功率比較



四、胚胎植入數與活產率

(一) 植入胚胎數

109 年本國籍配偶間人工生殖施行試管嬰兒方式之 17,859 植入周期數中 (含 3,650 植入新鮮胚胎週期及 14,209 植入冷凍胚胎週期)，本國籍使用配偶精卵之人工生殖植入週期植入 2 個以下胚胎者，占 67% (圖 12)，其中 35 歲(含)以下占 82.6% (圖 13)；36 歲(含)以上占 58.3% (圖 14)。

圖12 109年本國籍使用配偶精卵之人工生殖受術妻植入數百分比

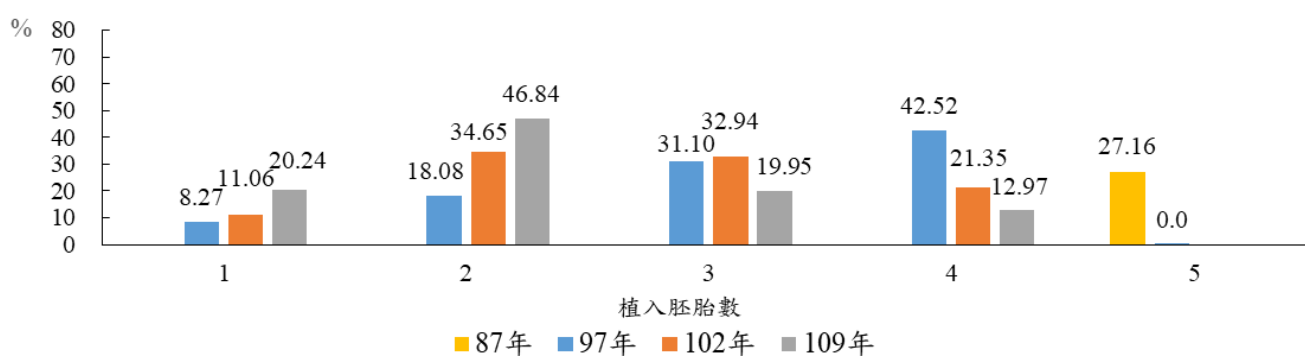


圖13 109年本國籍使用配偶精卵之人工生殖35歲(含)以下受術妻植入數百分比

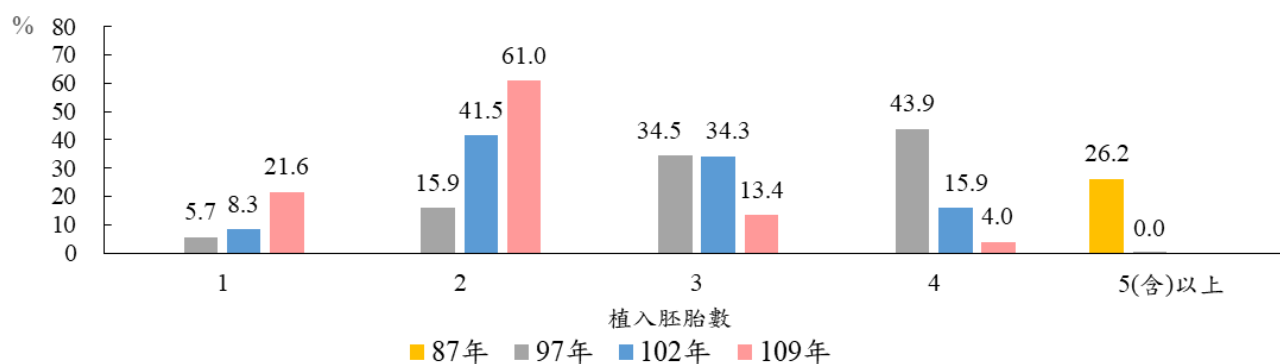
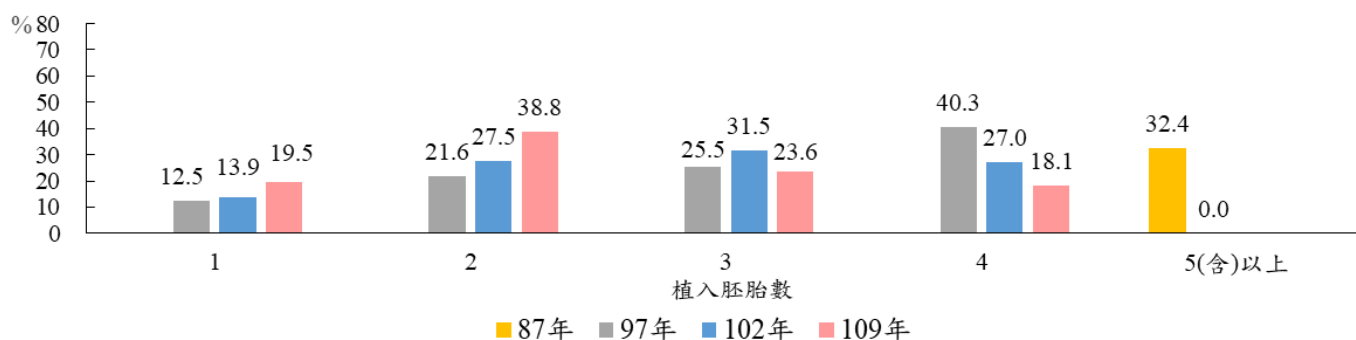


圖14 109年本國籍使用配偶精卵之人工生殖36歲(含)以上受術妻植入數百分比



(二)活產週期植入胚胎數

本國籍使用配偶精卵之人工生殖施行試管嬰兒方式，計 6,250 活產週期中，有 53.0%的週期植入 2 個胚胎，占最大比例(圖 15)。一般而言，胚胎植入數愈多，相對的產生二胞胎（含）以上的機率也愈大。另可觀察到植入 2 個胚胎的活產率達 39.6%(圖 16)，但相對的，其活產週期產生多胞胎的比例也高達 31.6%(圖 17)。

圖15 109年本國籍使用配偶精卵之人工生殖施行試管嬰兒方式其活產週期中植入胚胎數之分布（母數：6,250活產週期數）

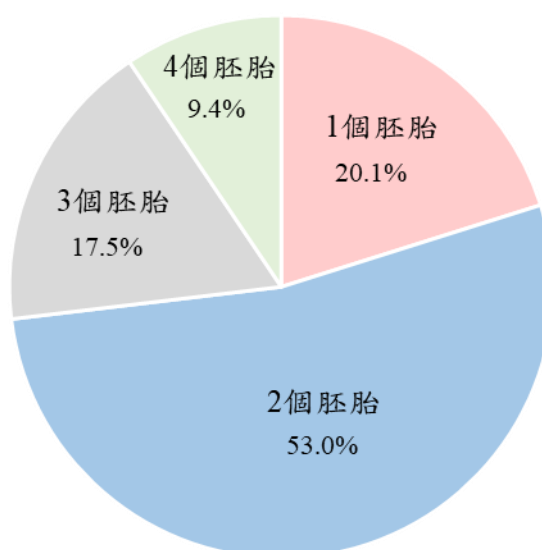


圖 16 109 年本國籍使用配偶精卵之人工生殖施行試管嬰兒方式植入胚胎數之活產率
(母數：6,250 活產週期數)

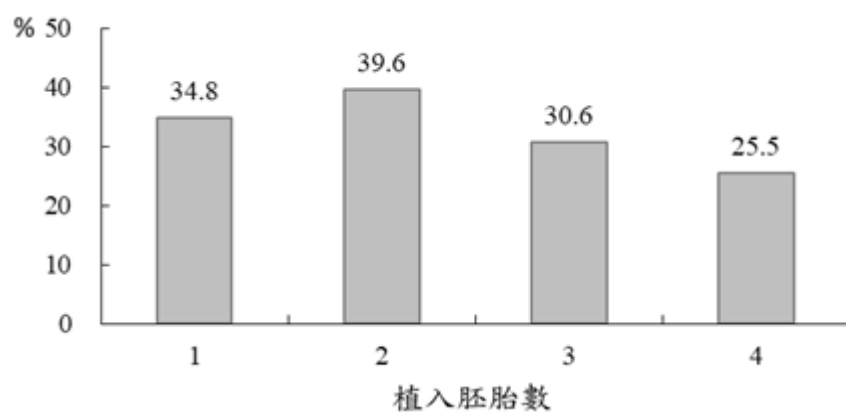
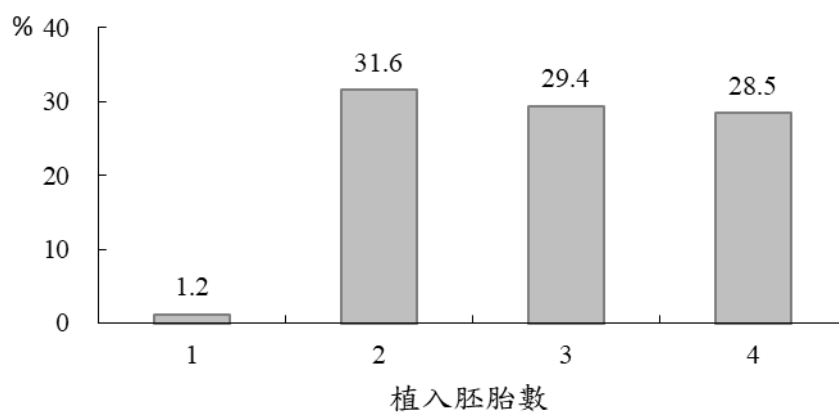


圖 17 109 年本國籍使用配偶精卵之人工生殖施行試管嬰兒方式活產週期中植入胚胎數
與多胞胎比例的關係



五、本國籍使用配偶精卵植入新鮮胚胎及冷凍胚胎之人工生殖情形比較

本國籍使用配偶精卵之人工生殖治療週期中，植入新鮮胚胎共 3,650 週期及植入冷凍胚胎共 14,209 週期進行比較。統計結果發現，植入新鮮胚胎與冷凍胚胎週期之懷孕率分別為 38.6% 及 49.6%；其活產率則為 26.9% 及 37.3%，兩者均達顯著差異 ($P < 0.0001$) (圖 18)。

懷孕率與活產率的高低明顯和受術妻的年齡有關，特別是年齡超過 40 歲的受術妻其成功率呈現明顯低落。以年齡分析，小於 35 歲其植入新鮮胚胎及冷凍胚胎懷孕率分別為 50.1% 及 59.5%，但超過 40 歲之懷孕率僅剩下 18.9% 及 29.9%；而植入新鮮胚胎週期活產率更是由小於 35 歲之 41.2% 降低到大於 40 歲之 7.2%，植入冷凍胚胎週期活產率則是由 49.3% 降低到 16.8%。

(圖 19)

圖 18 109 年本國籍配偶精卵之人工生殖植入新鮮胚胎及冷凍胚胎之成功率比較

(母數：17,859 週期；新鮮胚胎植入週期數 3,650 週期；冷凍胚胎植入週期數 14,209 週期)

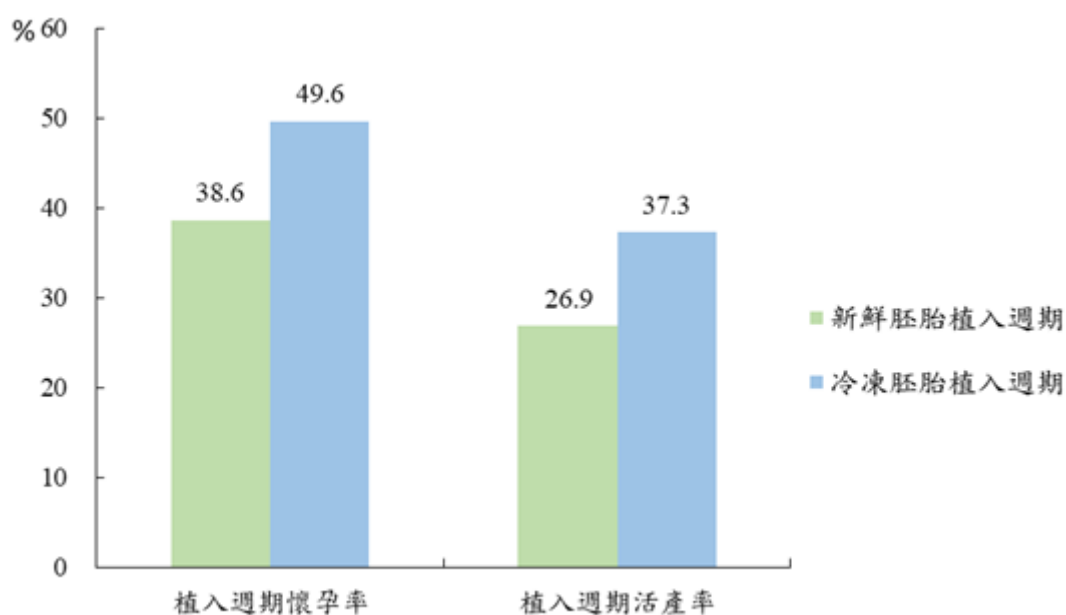
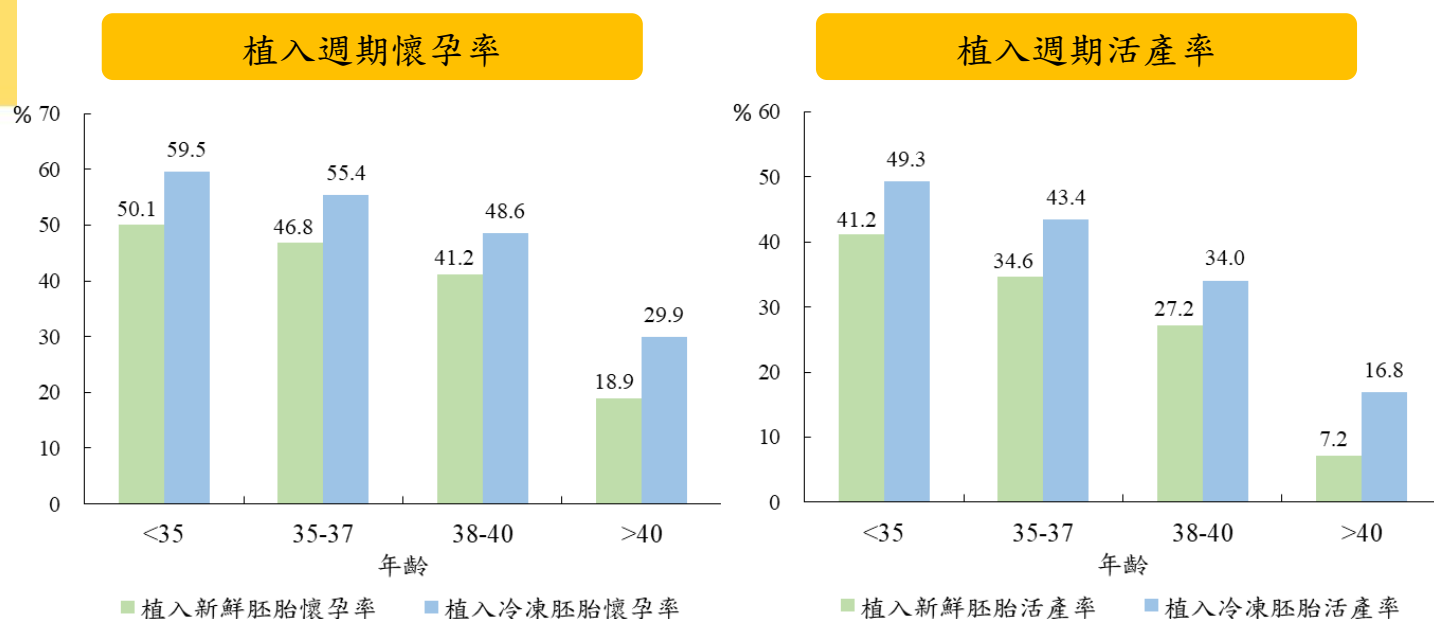
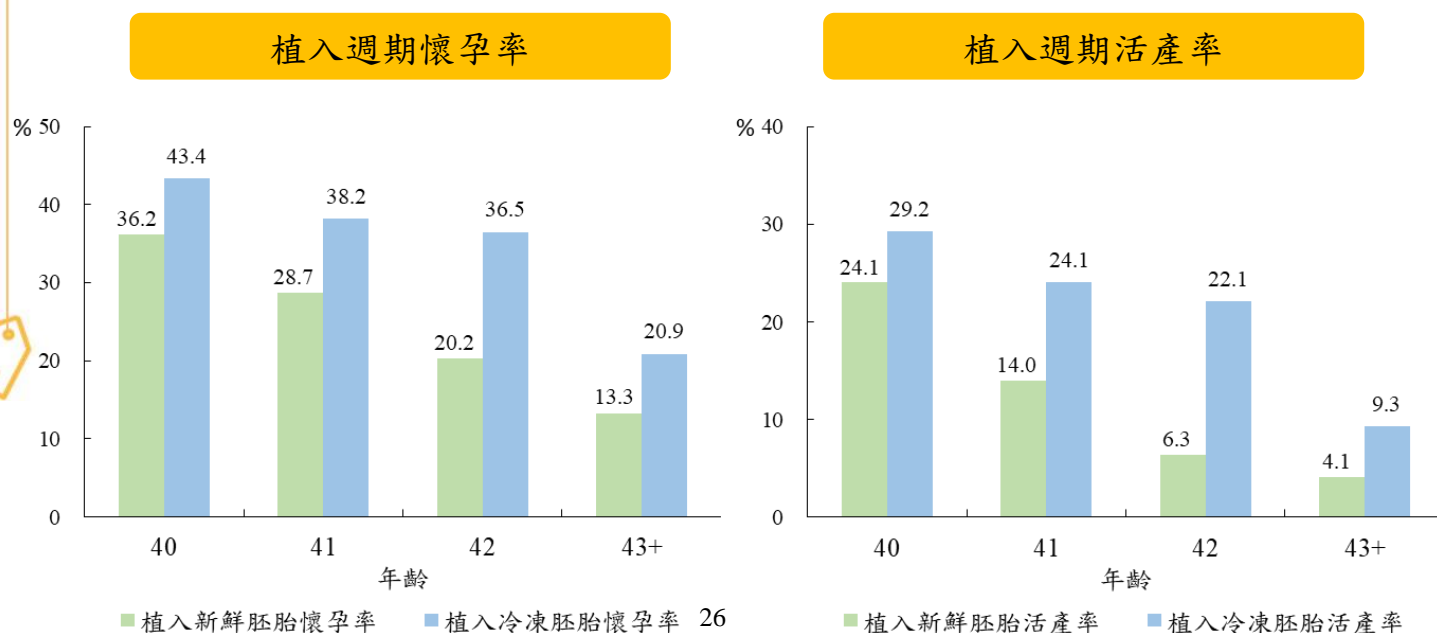


圖 19 109 年本國籍配偶精卵之人工生殖植入新鮮胚胎及冷凍胚胎之受術妻年齡別成功率



以受術妻年齡大於(含)40 歲者(共 5,607 植入週期)進行分析，年齡 40 歲之植入新鮮胚胎及冷凍胚胎週期懷孕率分別為 36.2%及 43.4%，但其活產率卻降至 24.1%及 29.2%。42 歲以後，植入週期成功率明顯下降，43 歲以上植入新鮮胚胎及冷凍胚胎週期懷孕率為 13.3%及 20.9%，而其活產率僅剩 4.1%及 9.3%(圖 20)。整體看來，在各年齡層植入冷凍胚胎週期之懷孕率及活產率均較植入新鮮胚胎週期為高。

圖 20 109 年本國籍配偶精卵之人工生殖植入新鮮胚胎及冷凍胚胎之受術妻年齡大於(含)40 歲者之年齡別成功率



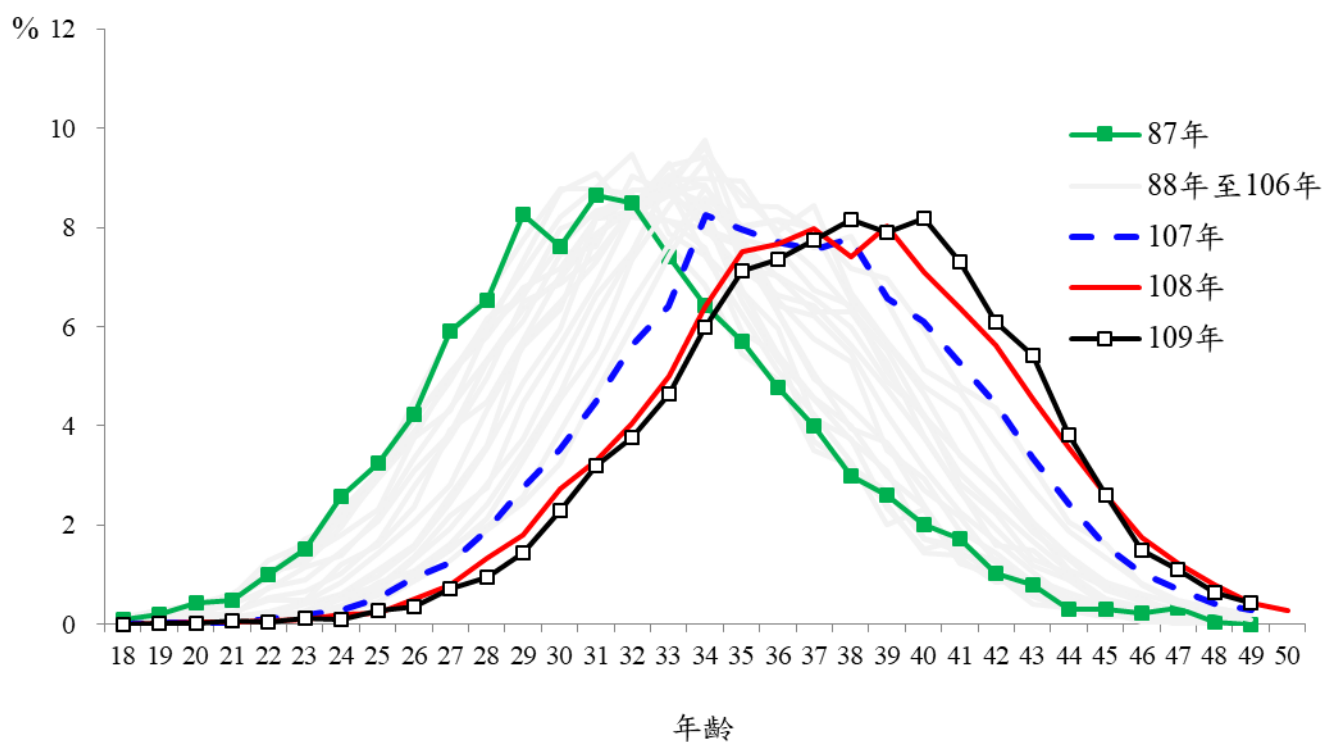
第四章 人工生殖趨勢 (87 年-109 年)

第一節、人工生殖治療週期趨勢

一、治療者之年齡

87 年至 109 年接受人工生殖之受術妻年齡有逐年增長趨勢，87 年年齡的中位數及平均數為 32 歲及 32.7 歲；107 年為 37 歲及 37.3 歲；108 年為 38 歲及 37.5 歲；109 年為 38 歲及 37.8 歲(圖 21)。

圖 21 87 年至 109 年人工生殖受術妻之年齡百分比分布



二、治療週期數、活產週期數與活產嬰兒數

87 年至 109 年接受人工生殖治療之週期數、活產週期數以及活產嬰兒數之情形。治療週期數除了 92 年可能受到嚴重急性呼吸道症候群 (SARS) 事件之影響，接受治療的週期有明顯的減少外，於 90 到 93 年均維持於 6,500 週期至 6,700 週期之間，94 年後則超過 7,200 週期，並逐年增加。109 年又因嚴重特殊傳染性肺炎(COVID-19)疫情緣故，降低民眾就醫意願，加上 109 年 3 月 19 日起進行邊境管制，禁止外籍旅客來臺，治療週期數為 38,289 週期，相對於 108 年的 44,256 週期減少了 13.5%(表 12)。

活產週期數在 93 年以前，維持於 1,500 週期至 1,800 週期間，94 年後則超過 2,000 週期，這可歸因於 94 年以後接受人工生殖治療週期數的增加，以及國內人工生殖技術之成熟所致。活產嬰兒數則維持穩定的數值，於 90 至 93 年，每年約有 2,400 到 2,600 位新生兒誕生；94 年到 96 年則每年約 2,800 至 2,900 位新生兒誕生，97 年有 3,093 位，至 109 年已增至 8,944 位，惟較 108 年 10,678 位減少了 1,734 位新生兒(表 12 及圖 22)。

另為了解本國籍人工生殖治療使用概況，自 97 年後另列出本國籍人工生殖受術夫妻(任一方為本國籍者即列入)之治療週期數、活產週期數及活產嬰兒數。109 年治療週期數 37,499 週期，較 108 年的 35,795 週期成長近 4.8%，但活產週期數 109 年的 6,551 週期卻較 108 年的 6,829 週期減少 4.1%，活產嬰兒數也由 108 年的 8,585 位降至 109 年的 8,164 位，減少了 421 位新生兒。



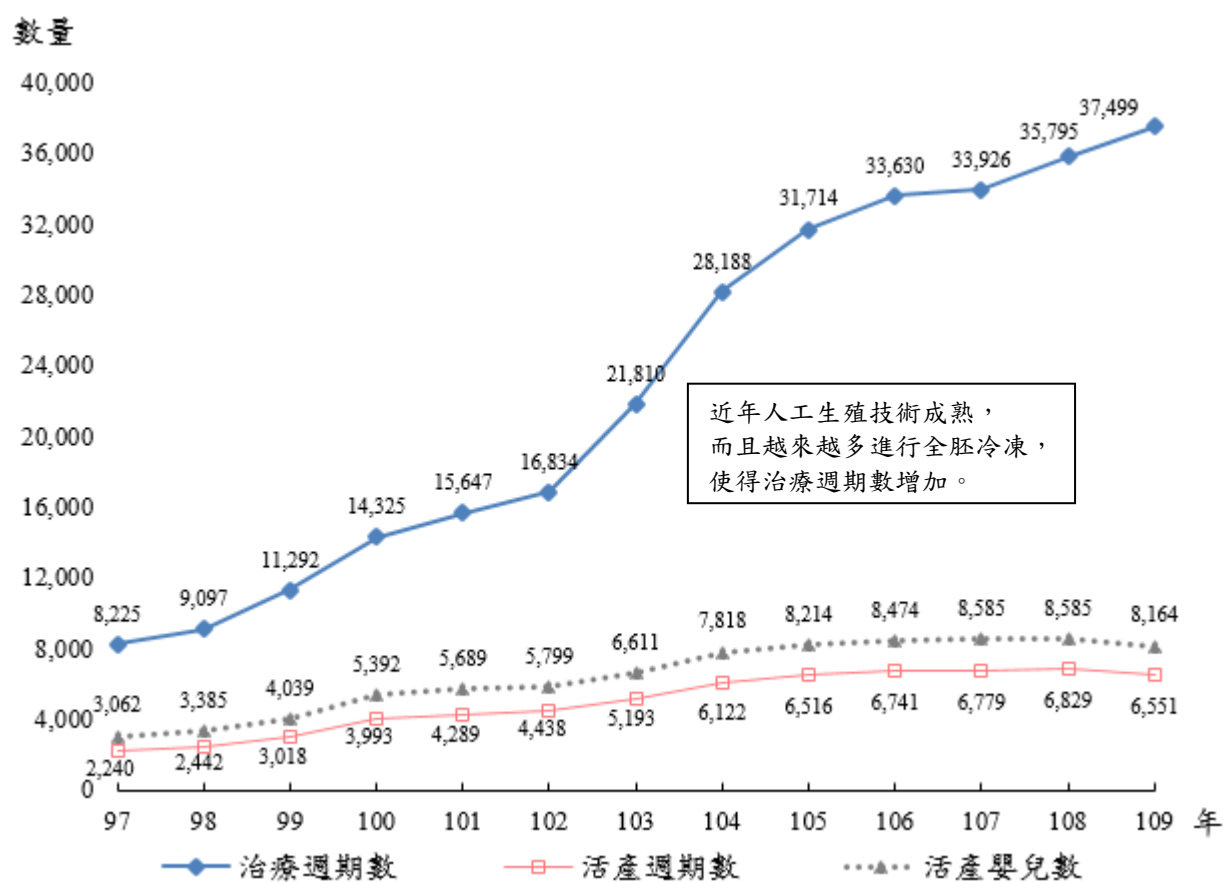
表 12 87 年至 109 年人工生殖治療週期數、活產週期數與活產嬰兒數

年	治療週期數 (單位：週期)	活產週期數 (單位：週期)	活產嬰兒數 ^{註1} (單位：個)	本國籍 ^{註2}		
				治療週期數 (單位：週期)	活產週期數 (單位：週期)	活產嬰兒數 (單位：個)
87	7,146	1,585	2,317			-
88	6,966	1,586	2,271			-
89	7,038	1,664	2,358			-
90	6,458	1,645	2,381			-
91	6,622	1,722	2,465			-
92	5,831	1,580	2,270			-
93	6,792	1,849	2,598			-
94	7,346	2,035	2,839			-
95	7,281	2,022	2,793			-
96	7,941	2,139	2,926			-
97	8,354	2,265	3,093	8,225	2,240	3,062
98	9,266	2,495	3,464	9,097	2,442	3,385
99	11,513	3,068	4,117	11,292	3,018	4,039
100	14,645	4,060	5,486	14,325	3,993	5,392
101	16,041	4,394	5,825	15,647	4,289	5,689
102	17,393	4,585	5,988	16,834	4,438	5,799
103	22,684	5,387	6,857	21,810	5,193	6,611
104	29,720	6,454	8,254	28,188	6,122	7,818
105	34,486	7,132	8,988	31,714	6,516	8,214
106	37,849	7,654	9,590	33,630	6,741	8,474
107	39,840	8,113	10,236	33,926	6,779	8,585
108	44,256	8,583	10,678	35,795	6,829	8,585
109	38,289	7,188	8,944	37,499	6,551	8,164
總計	393,757	89,205	116,738			-

註：1.以當年度治療者為統計對象，故活產嬰兒數非該年度全國人工生殖出生嬰兒數。

2.本國籍定義為人工生殖受術夫妻其中一方為本國籍者，排除受術夫妻皆為外國籍者。

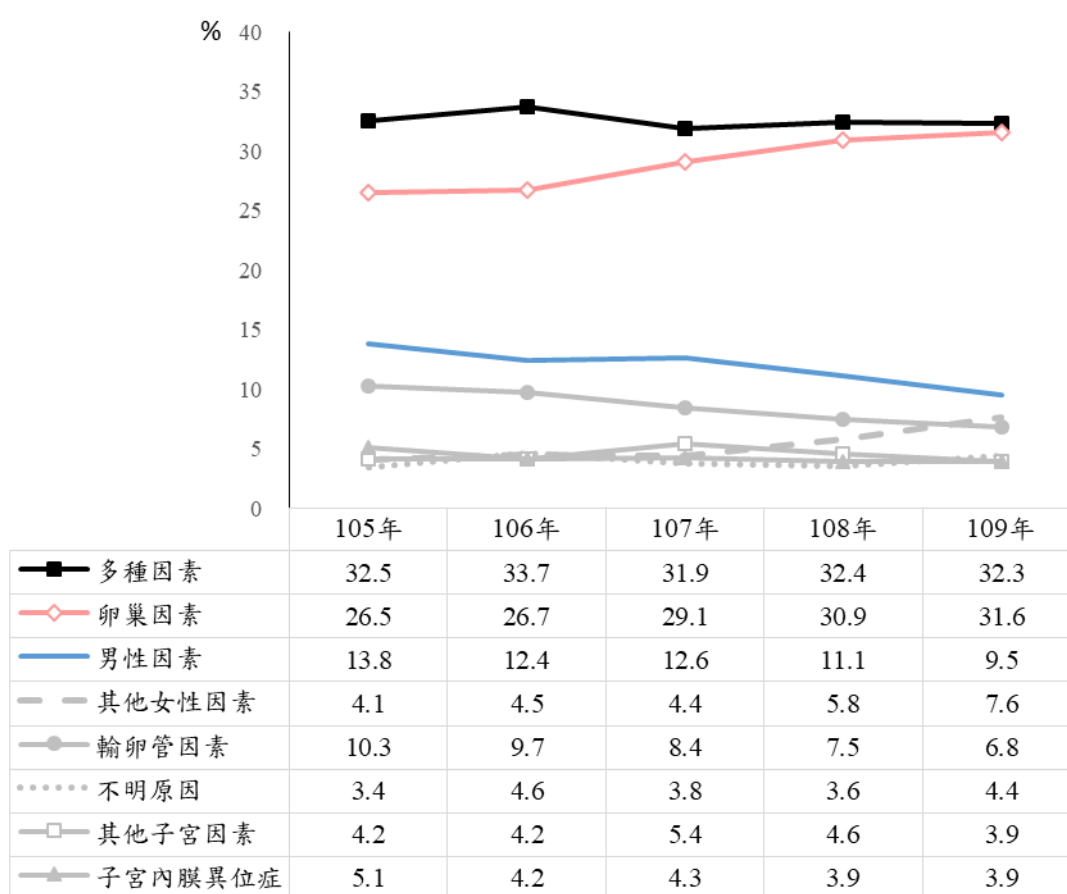
圖 22 97 年至 109 年本國籍人工生殖治療週期數、活產週期數與活產嬰兒數



三、本國籍受術夫妻之不孕原因

104 年修正人工生殖資料及管理辦法，將不孕原因自五項細分為八項，增列卵巢因素、子宮內膜異位症及其他子宮因素。近 5 年不孕原因前三位為卵巢因素、多種因素及男性因素，109 年以多種因素為最高(圖 23)。

圖 23 近 5 年（105 年至 109 年）本國籍人工生殖之不孕原因百分比



四、本國籍人工生殖治療週期懷孕率與活產率

圖 24 顯示 97 年至 109 年人工生殖之治療週期懷孕率及活產率以 100 年 37.5%及 27.9%達最高。隨後開始有下降的趨勢，109 年分別為 25.2%及 17.5%。因近年人工生殖越來越多進行全胚冷凍，使得治療週期數增加，但該週期並未進行植入，故以治療週期累積懷孕率、治療週期累積活產率較能真實呈現人工生殖技術品質。

治療週期累積懷孕率由 97 年的 41.3%，109 年提升至 45.4%；治療週期累積活產率則由 97 年的 30.8%，提升至 109 年的 31.5%(圖 25)。

圖 24 97 年至 109 年本國籍人工生殖之治療週期懷孕率及活產率

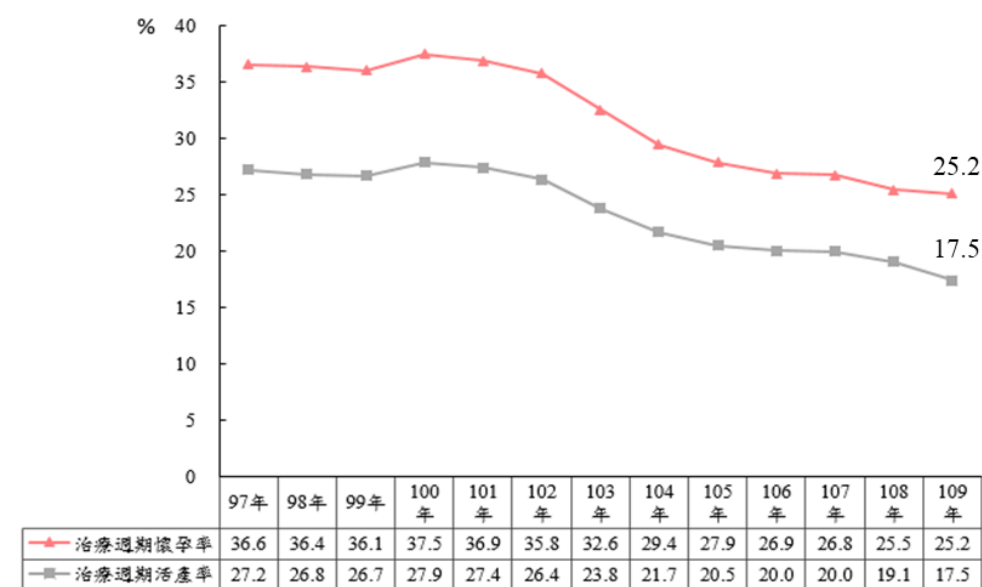
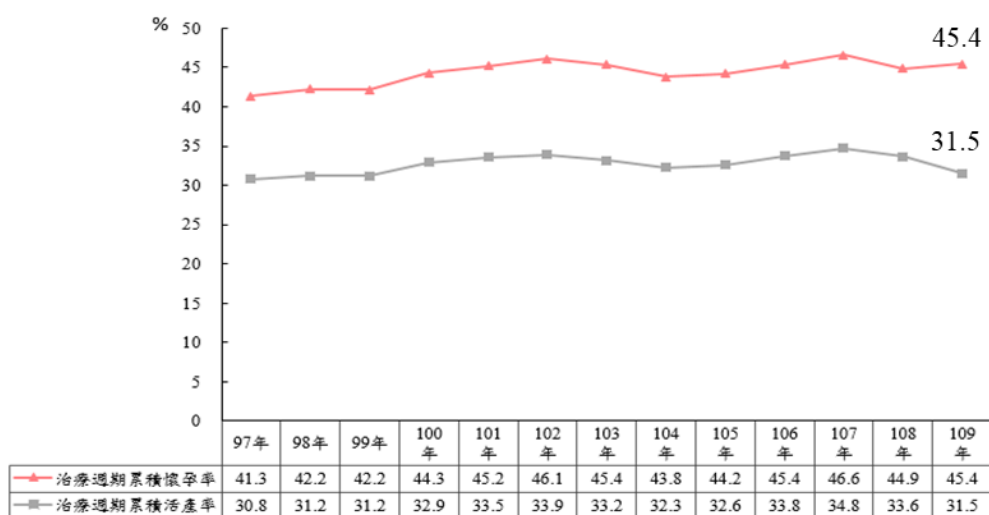


圖 25 97 年至 109 年本國籍人工生殖之治療週期累積懷孕率及累積活產率



第二節、本國籍植入週期成功率趨勢

本國籍植入新鮮胚胎的懷孕率及活產率由 97 年 40.0%及 29.9%，降低為 109 年為 39.2%及 27.5%。植入冷凍胚胎的懷孕率及活產率上升至 109 年 50.0%及 37.6%。98 年以後植入冷凍胚胎之懷孕率及活產率皆高於植入新鮮胚胎之懷孕率及活產率(圖 26 及圖 27)。

圖 26 97 年至 109 年本國籍植入新鮮胚胎與冷凍胚胎之植入週期懷孕率

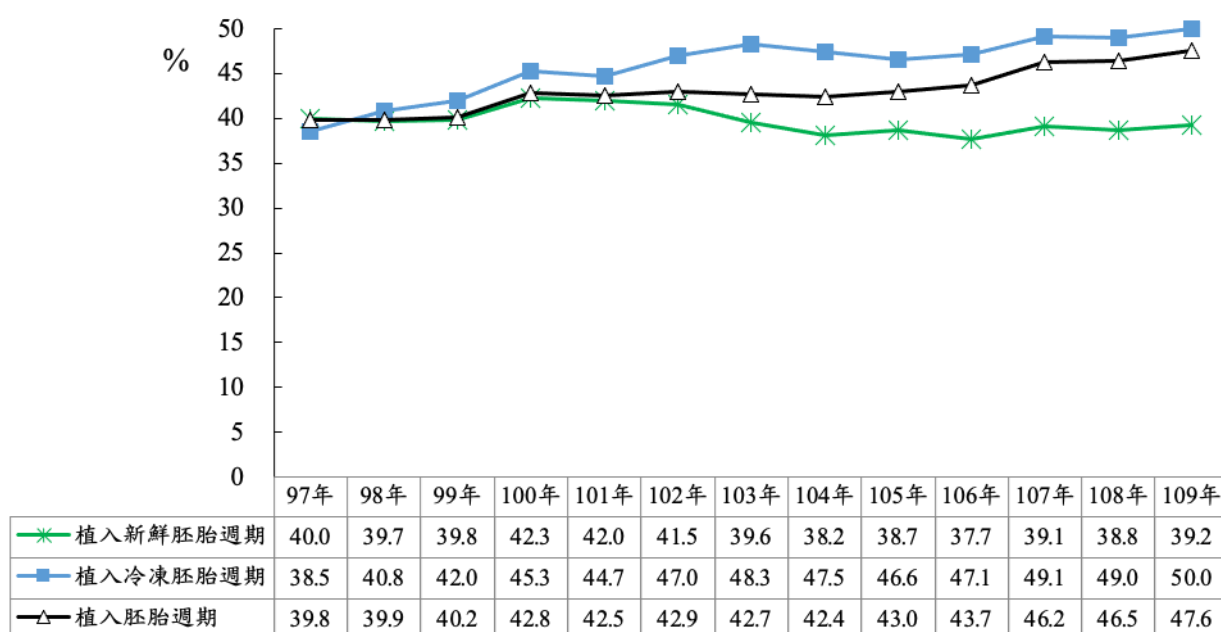
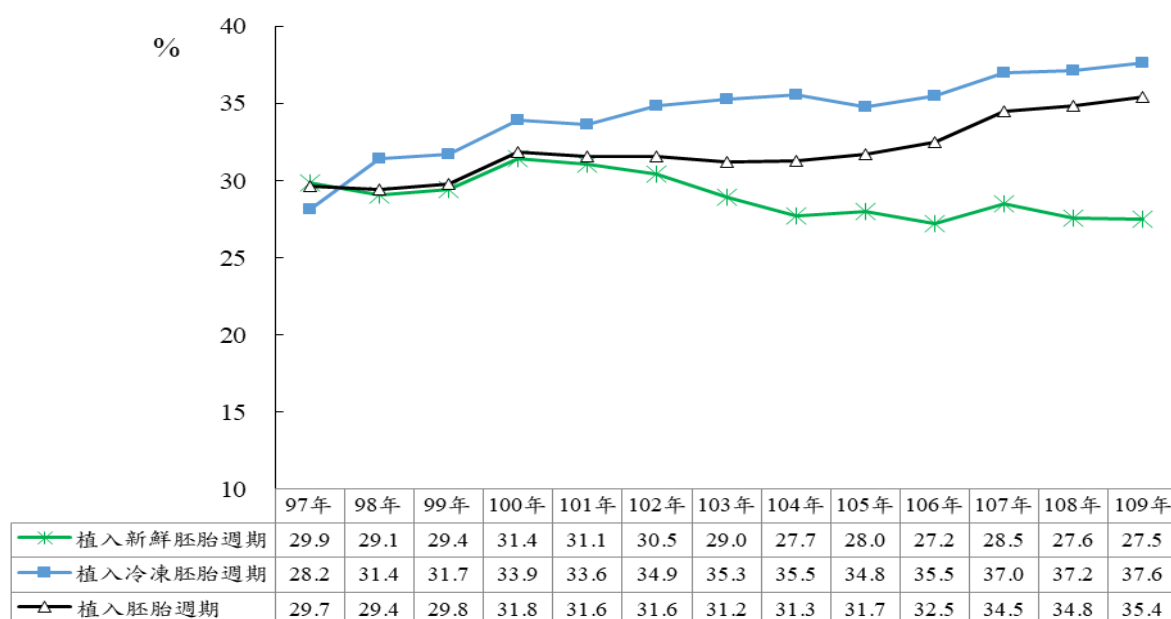
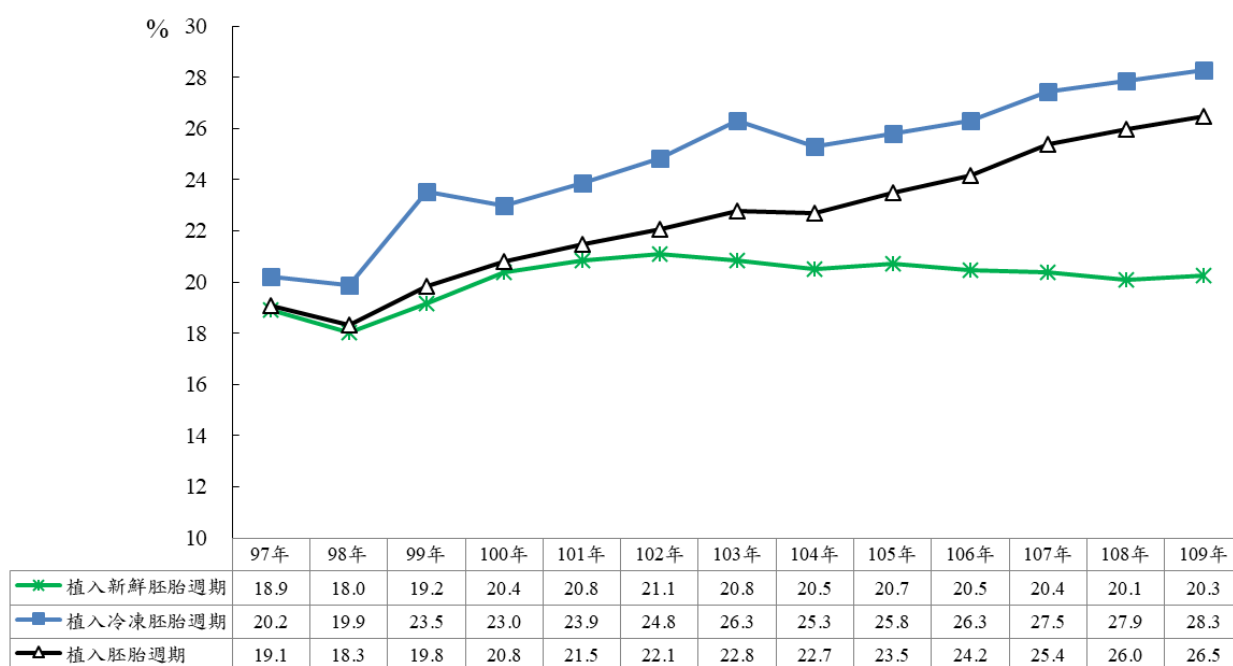


圖 27 97 年至 109 年本國籍植入新鮮胚胎與冷凍胚胎之植入週期活產率



植入新鮮胚胎的單胎活產率自 98 年以來呈現上升趨勢，98 年為 18.0%，109 年達 20.3%；而植入冷凍胚胎的單胎活產率，自 98 年的 19.9% 上升到 109 年的 28.3%。97 年以後，植入冷凍胚胎之單胎活產率皆高於植入新鮮胚胎之單胎活產率（圖 28）。

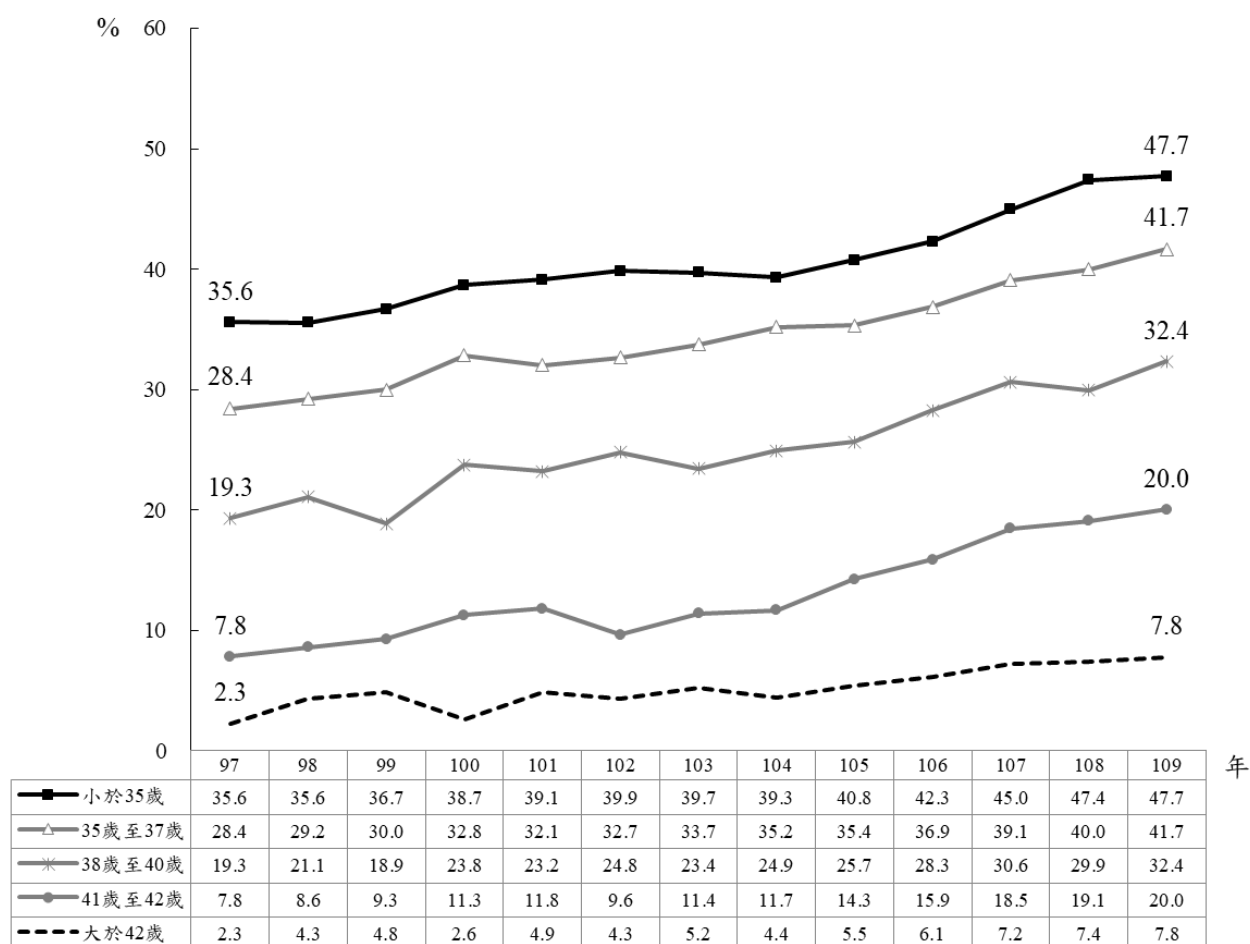
圖 28 97 年至 109 年本國籍植入新鮮胚胎與冷凍胚胎之植入週期單胎活產率



第三節、本國籍各年齡層之植入週期成功率趨勢

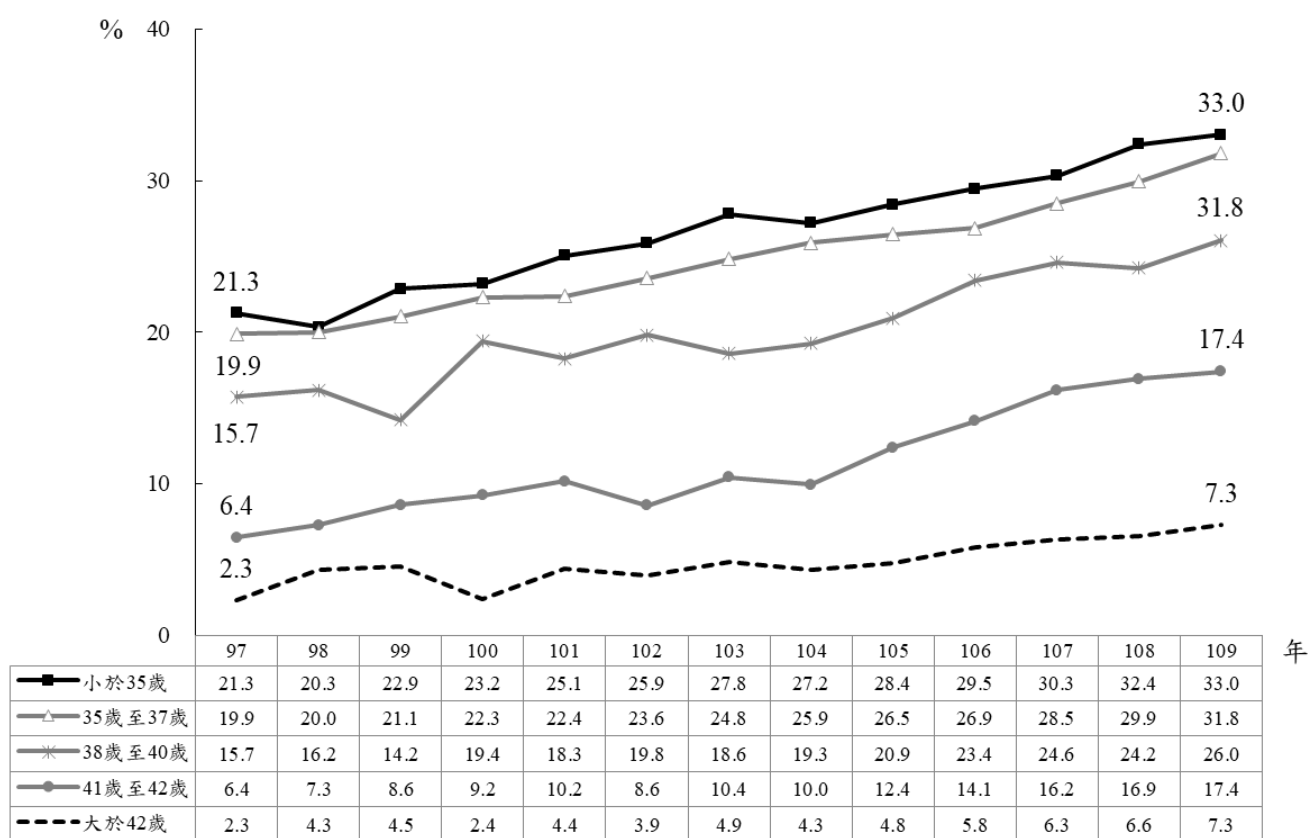
植入週期活產率使用捐贈卵子會受捐贈者年齡影響，所以僅分析使用配偶精卵人工生殖之植入週期活產率。受術妻在未滿 35 歲者之植入週期活產率由 97 年的 35.6% 提高到 109 年的 47.7%，同樣的時期，35 到 37 歲年齡層提高 13.3 百分點，於 38 到 40 歲提高 13.1 百分點，於 41 到 42 歲提高 12.2 個百分點，而年齡大於 42 歲之受術妻則提高 5.5 百分點(圖 29)。

圖 29 97 年至 109 年本國籍使用配偶間精卵之植入週期活產率（為受術妻年齡層區分）



受術妻年齡在未滿 35 歲者之植入單胎率由 97 的 21.3% 提高到 109 年的 33.0%。同樣的時期，植入週期單胎率在 35 到 37 歲年齡層提高 11.9 個百分點，於 38 到 40 歲提高 10.3 個百分點，於 41-42 歲提高 11 個百分點，而在年齡大於 42 歲之受術妻則提高 5 個百分點(圖 30)。

圖 30 97 年至 109 年本國籍使用配偶間精卵之植入週期單胎率（為受術妻年齡層區分）

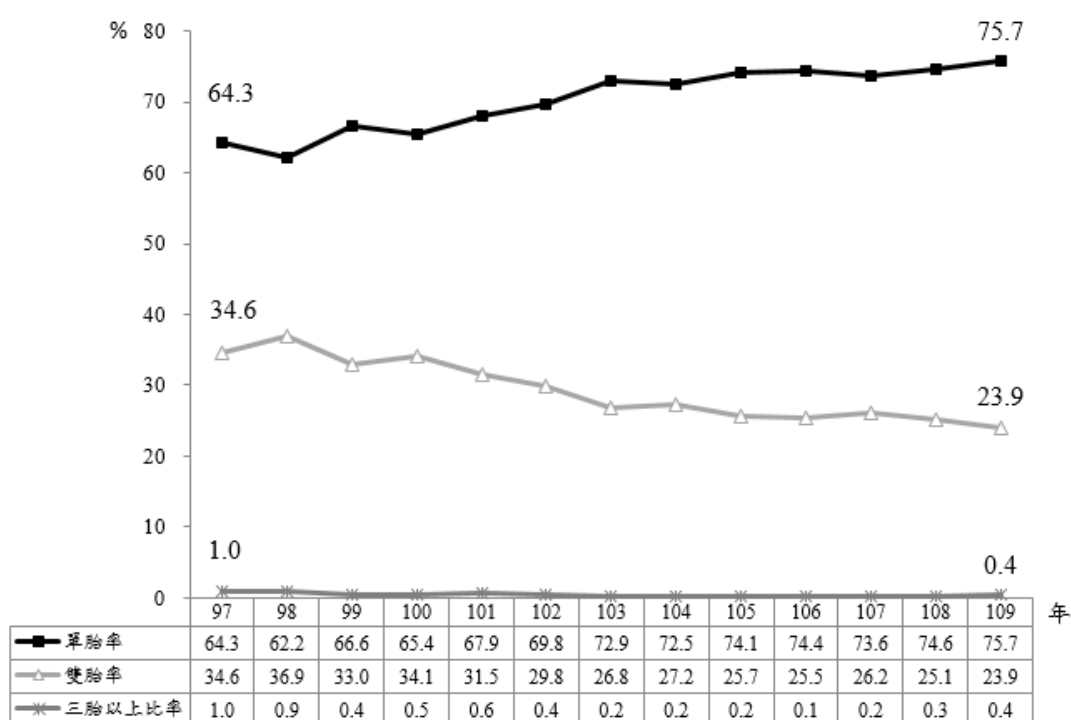


第四節、本國籍活產週期出生胎數、體重與週數

單胎率是測量成功率很重要的一項指標，因為單胎生產比多胞胎生產有較低的危險性，包括早產、低體重兒、先天性缺陷以及死亡等。為了有效輔導人工生殖機構減少多胞胎率，本署於 103 年將「未滿 35 歲之植入 2 個以下胚胎之比率」納入人工生殖機構許可監測指標之一。

本國籍人工生殖治療之活產週期中，單胎率從 97 年的 64.3% 上升到 109 年的 75.7%；而雙胞胎及三胞胎以上比率則從 97 年的 34.6% 及 1.0%，下降至 109 年的 23.9% 及 0.4% (圖 31)。

圖 31 97 年至 109 年本國籍活產週期胎數百分比



本國籍人工生殖活產嬰兒中，出生體重低於 1,500 公克者，97 年占有所有活產嬰兒 5.6%，109 年下降至 3.9%；1,500 公克至 2,499 公克則從 97 年 37.3% 下降至 109 年 29.7%；而大於等於 2,500 公克者，則從 97 年 57.1% 上升至 109 年 66.4% (圖 32)。另，97 年出生週數小於 37 週者占 44.4%，109 年下降至 35.2%；37 週至 41 週從 97 年占 55.6% 上升至 109 年 64.7%，大於等於 42 週者則從 97 年 0.03% 上升至 109 年 0.06% (圖 33)。

圖 32 97 年至 109 年本國籍活產嬰兒之出生體重百分比

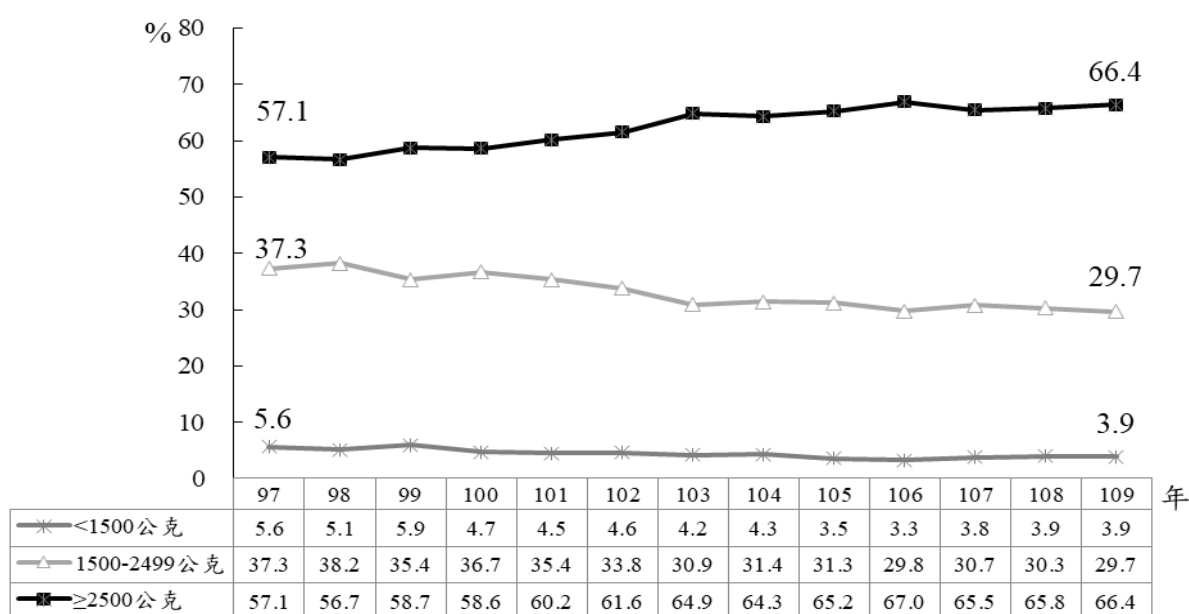
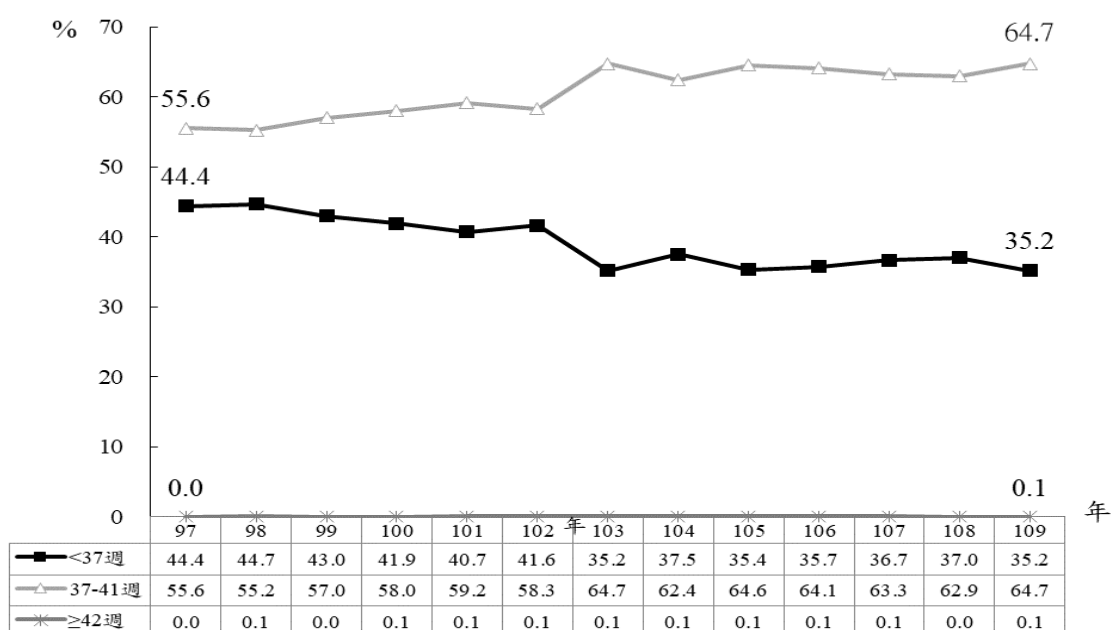


圖 33 97 年至 109 年本國籍活產嬰兒之出生週數百分比



附錄 1 109 年人工生殖統計摘要

概 廓

人工生殖方法		施術過程		不孕原因	
IVF/ET	99.9%	使用 ICSI	39%	輸卵管因素	7%
ZIFT/TET	<1%			卵巢因素	32%
AID	<1%			子宮內膜異位症	4%
				其他子宮因素	4%
				其他女性因素	8%
				男性因素	10%
				多種因素	32%
				不明原因	3%

懷孕成功率

週期類型	女性年齡				合計
	<35	35-37	38-40	>40	
人工生殖之新鮮胚胎					
治療週期數	4,685	4,379	5,485	7,288	21,837
懷孕週期百分比	10.9	10.2	8.9	3.5	7.8
活產週期百分比	9.0	7.6	5.9	1.6	5.5
植入週期數	1,019	959	1,176	1,193	4,347
植入週期之懷孕率	50.2	46.7	41.3	21.3	39.1
植入週期之活產率	41.4	34.7	27.6	9.6	27.4
植入週期之單胎活產率	30.2	25.8	21.1	8.2	20.7
取消百分比	79.5	79.3	80.0	85.0	81.4
平均植入胚胎數	2.1	2.4	2.6	2.7	2.5
活產週期之多胞胎百分比	27.0	25.8	23.5	14.0	24.5
人工生殖之冷凍胚胎					
治療週期數	4,506	4,142	3,799	4,005	16,452
懷孕週期百分比	58.5	53.8	47.2	32.5	48.4
活產週期百分比	48.3	42.2	33.2	20.1	36.4
植入週期數	4,389	4,016	3,671	3,805	15,881
植入週期之懷孕率	60.1	55.5	48.9	34.2	50.1
植入週期之活產率	49.6	43.5	34.4	21.2	37.7
植入週期之單胎活產率	34.1	33.3	28.0	18.1	28.7
取消百分比	2.6	3.0	3.4	5.0	3.5
平均植入胚胎數	1.9	2.1	2.2	2.4	2.1
活產週期之多胞胎百分比	31.3	23.4	18.6	14.5	24.1

非捐贈卵子之新鮮胚胎	<35	35-37	38-40	>40	合計
治療週期數	4,631	4,339	5,413	6,839	21,222
懷孕週期百分比	10.9	10.2	8.8	3.1	7.7
活產週期百分比	9.0	7.6	5.8	1.2	5.4
植入週期數	1,013	953	1,162	1,126	4,254
植入週期之懷孕率	50.0	46.6	41.0	19.0	38.6
植入週期之活產率	41.1	34.5	27.1	7.4	26.9
植入週期之單胎活產率	29.8	25.6	20.8	6.6	20.3
取消百分比	79.3	79.1	79.8	84.6	81.1
平均植入胚胎數	2.1	2.4	2.7	2.7	2.5
活產週期之多胞胎百分比	27.4	25.8	23.2	10.8	24.6

非捐贈卵子之冷凍胚胎	<35	35-37	38-40	>40	合計
治療週期數	4,451	4,072	3,707	3,238	15,468
懷孕週期百分比	58.4	53.8	47.1	28.4	48.2
活產週期百分比	48.2	42.2	33.1	16.1	36.3
植入週期數	4,337	3,946	3,588	3,069	14,940
植入週期之懷孕率	59.9	55.5	48.7	30.0	49.9
植入週期之活產率	49.5	43.6	34.2	17.0	37.6
植入週期之單胎活產率	33.9	33.4	27.9	15.1	28.5
取消百分比	2.6	3.1	3.2	5.2	3.5
平均植入胚胎數	1.9	2.1	2.3	2.5	2.2
活產週期之多胞胎百分比	31.4	23.3	18.5	11.1	24.2

非捐贈精子之新鮮胚胎	<35	35-37	38-40	>40	合計
治療週期數	4,616	4,350	5,454	7,247	21,667
懷孕週期百分比	10.9	10.2	8.9	3.5	7.8
活產週期百分比	9.0	7.6	5.9	1.6	5.5
植入週期數	1,003	949	1,173	1,186	4,311
植入週期之懷孕率	50.2	46.8	41.3	21.3	39.1
植入週期之活產率	41.4	34.8	27.5	9.5	27.4
植入週期之單胎活產率	30.2	25.8	21.1	8.2	20.7
取消百分比	79.4	79.3	79.9	85.0	81.4
平均植入胚胎數	2.1	2.4	2.6	2.7	2.5
活產週期之多胞胎百分比	27.0	25.8	23.2	14.2	24.4

非捐贈精子之冷凍胚胎	<35	35-37	38-40	>40	合計
治療週期數	4,429	4,106	3,761	3,975	16,271
懷孕週期百分比	58.4	53.8	47.2	32.5	48.3
活產週期百分比	48.2	42.2	33.0	20.2	36.3
植入週期數	4,316	3,984	3,635	3,778	15,713
植入週期之懷孕率	59.9	55.4	48.8	34.2	50.0
植入週期之活產率	49.4	43.4	34.2	21.2	37.6
植入週期之單胎活產率	34.0	33.3	27.8	18.1	28.6
取消百分比	2.6	3.0	3.4	5.0	3.4

附錄 1 109 年人工生殖統計摘要

平均植入胚胎數	1.9	2.1	2.3	2.4	2.2
活產週期之多胞胎百分比	31.3	23.3	18.7	14.6	24.0
配偶間之新鮮胚胎	<35	35-37	38-40	>40	合計
治療週期數	4,562	4,310	5,382	6,798	21,052
懷孕週期百分比	10.9	10.2	8.8	3.1	7.7
活產週期百分比	9.0	7.6	5.8	1.2	5.4
植入週期數	997	943	1,159	1,119	4,218
植入週期之懷孕率	49.9	46.7	41.0	19.0	38.5
植入週期之活產率	41.0	34.6	27.1	7.3	26.8
植入週期之單胎活產率	29.8	25.7	20.9	6.5	20.2
取消百分比	79.2	79.2	79.7	84.6	81.1
平均植入胚胎數	2.1	2.4	2.7	2.7	2.5
活產週期之多胞胎百分比	27.4	25.8	22.9	11.0	24.5
配偶間之冷凍胚胎	<35	35-37	38-40	>40	合計
治療週期數	4,374	4,036	3,669	3,208	15,287
懷孕週期百分比	58.3	53.8	47.0	28.4	48.1
活產週期百分比	48.1	42.2	33.0	16.1	36.2
植入週期數	4,264	3,914	3,552	3,042	14,772
植入週期之懷孕率	59.8	55.4	48.6	29.9	49.8
植入週期之活產率	49.3	43.5	34.0	17.0	37.4
植入週期之單胎活產率	33.8	33.4	27.7	15.1	28.4
取消百分比	2.5	3.0	3.2	5.2	3.4
平均植入胚胎數	1.9	2.1	2.3	2.5	2.2
活產週期之多胞胎百分比	31.4	23.2	18.5	11.2	24.2

所有年齡合計

捐贈卵子	新鮮胚胎	冷凍胚胎
植入週期數	93	941
植入週期之活產率	53.8	40.3
平均植入胚胎數	2.0	1.8
捐贈精子	新鮮胚胎	冷凍胚胎
植入週期數	36	168
植入週期之活產率	33.3	50.0
平均植入胚胎數	2.7	1.9
配偶間	新鮮胚胎	冷凍胚胎
植入週期數	4,218	14,772
植入週期之活產率	26.8	37.4
平均植入胚胎數	2.5	2.2

植入胚胎數及活產單胞胎率**35 歲以下**

	植入胚胎數			
	1	2	3	4
植入週期數	1209	3383	649	166
植入週期懷孕率	54	61	54	55
胎心音單胞胎率	94	61	58	57
活產單胞胎率	99	62	58	61

35-37 歲

	植入胚胎數			
	1	2	3	4
植入週期數	1134	2495	941	405
植入週期懷孕率	51	56	52	52
胎心音單胞胎率	96	67	60	59
活產單胞胎率	99	71	69	64

38-40 歲

	植入胚胎數			
	1	2	3	4
植入週期數	1012	1912	1164	759
植入週期懷孕率	45	48	47	47
胎心音單胞胎率	93	64	63	57
活產單胞胎率	99	77	75	69

40 歲以上

	植入胚胎數			
	1	2	3	4
植入週期數	1120	1615	1121	1142
植入週期懷孕率	35	33	29	27
胎心音單胞胎率	88	64	61	60
活產單胞胎率	100	75	85	86

通報資料之人工生殖機構數：93

附錄 2 109 年個別人工生殖機構統計資料

縣市	機構名稱	治療週期數	人工生殖方法(%)			不孕原因(%)				
			IVF 體外受精	ICSI (含 IVF+ICSI) 卵質內 精子注射	其他	輸卵管 因素	其他女 性因素	男性 因素	多種 因素	不明 原因
基隆市	健安婦產科診所	327	72.8	27.2	0.0	10.7	46.2	11.3	22.9	8.9
臺北市	國立臺灣大學醫學院附設醫院	1216	62.3	37.7	0.0	5.5	30.3	7.4	51.8	5.0
	長庚醫療財團法人 台北長庚紀念醫院	340	15.9	84.1	0.0	0.0	7.6	0.0	92.4	0.0
	臺北榮民總醫院	480	79.0	21.0	0.0	7.9	39.6	42.3	5.6	4.6
	國防醫學院三軍總醫院	194	58.8	41.2	0.0	6.2	29.9	7.2	54.6	2.1
	台灣基督長老教會 馬偕醫療財團法人 馬偕紀念醫院	596	64.8	35.2	0.0	5.4	21.8	29.5	29.5	13.8
	國泰醫療財團法人 國泰綜合醫院	270	89.6	10.4	0.0	11.9	61.5	8.5	18.1	0.0
	中山醫療社團法人 中山醫院	367	29.4	18.3	52.3	9.8	50.7	14.4	20.2	4.9
	新光醫療財團法人 新光吳火獅紀念醫院	222	43.7	56.3	0.0	21.6	41.0	20.3	10.8	6.3
	基督復臨安息日會 醫療財團法人臺安醫院	235	75.7	24.3	0.0	0.0	71.1	12.3	16.6	0.0
	臺北醫學大學附設醫院	1421	70.7	29.3	0.0	8.9	71.6	12.3	4.2	3.0
	生泉婦產科診所	93	73.1	26.9	0.0	10.8	47.2	17.2	2.2	22.6
	宏孕診所	103	25.2	74.8	0.0	1.9	34.0	20.4	32.0	11.7
	祈新婦產科診所	310	60.0	40.0	0.0	0.6	59.4	4.8	32.3	2.9
	愛群婦產科診所	1170	33.2	31.5	35.3	7.4	60.5	6.8	24.0	1.3
	黃建榮婦產科診所	868	29.3	70.7	0.0	8.9	31.7	13.5	29.0	16.9
	王家瑋婦產科診所	1550	58.0	42.0	0.0	5.3	17.3	8.7	68.7	0.0
	生基婦產科診所	222	86.5	12.2	1.4	2.3	64.8	9.0	22.1	1.8
	臺北市立聯合醫院 仁愛院區	164	24.4	42.1	33.5	4.6	67.6	4.9	19.5	3.7
	華育婦產科診所	424	60.4	31.4	8.3	9.9	55.4	5.4	5.0	24.3
	送子鳥 11 診所	847	56.0	44.0	0.0	0.0	96.6	3.4	0.0	0.0

附錄 2 109 年個別人工生殖機構統計資料

縣市	機構名稱	治療週期數	人工生殖方法(%)			不孕原因(%)				
			IVF 體外受精	ICSI (含 IVF+ICSI) 卵質內 精子注射	其他	輸卵管 因素	其他女 性因素	男性 因素	多種 因素	不明 原因
臺北市	佑昇診所	1768	73.3	26.7	0.0	12.4	60.5	9.0	3.6	14.5
	臺北婦產科診所	1436	53.6	46.4	0.0	7.8	67.6	5.1	14.4	5.1
	孕醫診所	253	83.8	16.2	0.0	2.0	15.4	3.6	77.4	1.6
新北市	醫療財團法人徐元智先生醫藥基金會亞東紀念醫院	235	40.4	59.6	0.0	5.1	33.2	6.0	52.7	3.0
	蔡佳璋婦幼聯合診所	143	74.8	25.2	0.0	3.5	63.6	10.5	16.1	6.3
	衛生福利部雙和醫院	27	51.9	33.3	14.8	0.0	44.5	0.0	22.2	33.3
	佛教慈濟醫療財團法人台北慈濟醫院	72	47.2	52.8	0.0	11.1	51.4	13.9	13.9	9.7
	星孕國際診所	95	46.3	53.7	0.0	5.3	71.5	2.1	21.1	0.0
	基生婦產科診所	208	55.8	44.2	0.0	1.0	54.8	16.8	21.6	5.8
桃園市	長庚醫療財團法人林口長庚紀念醫院	1412	47.0	52.9	0.1	3.3	40.2	2.3	53.9	0.3
	衛生福利部桃園醫院	109	41.3	20.2	38.5	11.0	59.7	10.2	18.3	0.9
	敏盛綜合醫院	117	63.2	36.8	0.0	15.4	46.2	17.1	8.5	12.8
	宏其婦幼醫院	687	46.1	53.9	0.0	18.0	44.6	11.2	26.2	0.0
	惠生婦產科診所	131	90.8	9.2	0.0	17.6	39.7	9.9	16.8	16.0
	婦茂婦幼診所	13	23.1	76.9	0.0	7.7	23.1	23.1	0.0	46.1
新竹市	江婦產科診所	37	40.5	59.5	0.0	5.4	46.0	45.9	0.0	2.7
	送子鳥診所	1566	65.5	34.5	0.0	0.4	95.6	3.9	0.0	0.1
	台灣基督長老教會馬偕醫療財團法人新竹馬偕紀念醫院	323	48.3	51.7	0.0	4.6	11.5	26.0	56.4	1.5
	林正凱好孕診所	288	73.6	26.4	0.0	1.0	29.9	7.6	61.5	0.0
新竹縣	艾微笑診所	1084	59.5	40.4	0.1	1.6	23.3	8.7	64.3	2.1
	中國醫藥大學新竹附設醫院	141	57.4	42.6	0.0	8.5	55.3	27.0	8.5	0.7
苗栗縣	大千綜合醫院	35	85.7	14.3	0.0	34.3	51.3	8.6	2.9	2.9
臺中市	中國醫藥大學附設醫院	235	46.4	53.6	0.0	8.1	32.3	18.7	26.4	14.5
	中山醫學大學附設醫院	171	58.5	41.5	0.0	0.6	1.2	2.9	94.7	0.6
	茂盛醫院	4625	53.8	46.2	0.0	2.8	21.8	3.2	72.2	0.0

附錄 2 109 年個別人工生殖機構統計資料

縣市	機構名稱	治療週期數	人工生殖方法(%)			不孕原因(%)				
			IVF 體外受精	ICSI (含 IVF+ICSI) 卵質內 精子注射	其他	輸卵管 因素	其他女 性因素	男性 因素	多種 因素	不明 原因
臺中市	臺中榮民總醫院	776	84.5	15.2	0.3	11.5	54.9	12.5	18.8	2.3
	澄清綜合醫院中港分院	63	77.8	22.2	0.0	41.3	53.9	4.8	0.0	0.0
	林新醫療社團法人 林新醫院	110	52.7	47.3	0.0	30.9	33.7	10.0	23.6	1.8
	劉忠俊婦產科診所	207	43.5	56.5	0.0	9.7	35.6	15.0	21.3	18.4
	美村婦產科診所	43	72.1	27.9	0.0	7.0	60.5	11.6	9.3	11.6
	謝耀元婦產科診所	22	13.6	86.4	0.0	0.0	81.8	18.2	0.0	0.0
	大新婦產科診所	440	28.6	26.4	45.0	6.6	57.5	2.7	32.3	0.9
	佛教慈濟醫療財團 法人台中慈濟醫院	31	90.3	9.7	0.0	25.8	25.8	6.5	25.8	16.1
	張帆婦產科診所	448	68.5	31.5	0.0	6.9	17.6	9.4	39.8	26.3
	樂芙婦產科診所	9	55.6	44.4	0.0	11.1	55.6	11.1	22.2	0.0
	童綜合醫療社團法 人童綜合醫院	23	43.5	56.5	0.0	34.8	39.1	17.4	8.7	0.0
彰化縣	彰化基督教醫療財 團法人彰化基督教 醫院	925	66.9	33.0	0.1	6.7	56.1	9.3	22.9	5.0
	彰化基督教醫療財 團法人漢銘基督教 醫院	2	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
	博元婦產科診所	354	54.5	45.5	0.0	14.4	68.9	8.8	7.9	0.0
	秀傳醫療財團法人 彰濱秀傳紀念醫院	41	80.5	19.5	0.0	22.0	34.1	14.6	19.5	9.8
雲林縣	國立臺灣大學醫學 院附設醫院雲林分 院	111	58.6	41.4	0.0	15.3	37.0	9.9	26.1	11.7
嘉義市	戴德森醫療財團法 人嘉義基督教醫院	26	84.6	15.4	0.0	15.4	46.1	23.1	0.0	15.4
	嘉安婦幼診所	178	38.8	61.2	0.0	8.4	69.1	20.2	0.6	1.7
嘉義縣	長庚醫療財團法人 嘉義長庚紀念醫院	101	97.0	3.0	0.0	25.7	25.7	0.0	14.9	33.7
臺南市	國立成功大學醫學 院附設醫院	509	87.6	12.4	0.0	4.9	42.3	9.8	37.1	5.9
	郭綜合醫院	111	75.7	24.3	0.0	4.5	51.4	4.5	24.3	15.3
	許朝欽婦產科診所	158	67.1	32.9	0.0	3.8	48.0	14.6	32.3	1.3

附錄 2 109 年個別人工生殖機構統計資料

縣市	機構名稱	治療週期數	人工生殖方法(%)			不孕原因(%)				
			IVF 體外受精	ICSI (含 IVF+ICSI) 卵質內 精子注射	其他	輸卵管 因素	其他女 性因素	男性 因素	多種 因素	不明 原因
臺南市	台灣基督長老教會 新樓醫療財團法人 台南新樓醫院	105	77.1	22.9	0.0	18.1	44.7	4.8	32.4	0.0
	安安婦幼診所	934	89.0	10.3	0.7	9.9	69.8	14.0	6.3	0.0
	大安婦幼醫院	51	54.9	45.1	0.0	11.8	45.1	27.5	7.8	7.8
	奇美醫療財團法人 奇美醫院	633	60.5	39.5	0.0	1.3	10.6	27.0	61.1	0.0
	環馨婦幼醫院	590	67.8	32.2	0.0	15.1	38.2	29.5	5.3	11.9
高雄市	財團法人私立高雄 醫學大學附設中和 紀念醫院	325	56.3	43.7	0.0	10.2	53.2	11.4	20.0	5.2
	健新醫院	917	7.2	92.8	0.0	5.3	70.1	14.8	9.8	0.0
	阮綜合醫療社團法 人阮綜合醫院	90	82.2	17.8	0.0	17.8	73.3	3.3	0.0	5.6
	高雄榮民總醫院	682	52.6	47.2	0.1	9.1	46.2	7.6	25.8	11.3
	張榮州婦產科診所	22	54.5	45.5	0.0	27.3	63.6	0.0	9.1	0.0
	好韻診所	141	90.1	9.9	0.0	4.3	79.4	7.8	8.5	0.0
	生生不息婦產科診 所	669	26.8	73.2	0.0	10.9	62.6	11.1	13.0	2.4
	義大醫療財團法人 義大大昌醫院	146	69.2	30.8	0.0	0.7	83.5	15.8	0.0	0.0
	長庚醫療財團法人 高雄長庚紀念醫院	623	88.3	11.7	0.0	9.0	49.3	6.6	25.8	9.3
	同喬眼科診所	222	81.5	18.5	0.0	7.7	55.3	6.8	27.9	2.3
	義大醫療財團法人 義大醫院	85	62.4	37.6	0.0	2.4	34.1	7.1	56.4	0.0
	旭陽診所	480	67.3	32.7	0.0	0.0	59.4	0.0	40.4	0.2
	鈞安婦幼聯合醫院	7	100.0	0.0	0.0	57.1	14.3	0.0	14.3	14.3
屏東縣	屏基醫療財團法人 屏東基督教醫院	17	100.0	0.0	0.0	11.8	29.4	0.0	58.8	0.0
花蓮縣	佛教慈濟醫療財團 法人花蓮慈濟醫院	40	52.5	15.0	32.5	2.5	52.5	17.5	22.5	5.0
金門縣	衛生福利部金門醫 院	70	51.4	48.6	0.0	2.9	91.4	5.7	0.0	0.0

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2. 台灣生殖醫學會 Taiwanese Society for Reproductive Medicine : <http://www.tsrm.org.tw/>
3. 中華民國生育醫學會 Fertility Society, ROC : [http:// fs.org.tw/](http://fs.org.tw/)
4. American Society for Reproductive Medicine : <http://www.asrm.org/>
5. Centers for Disease Control and Prevention : <http://www.cdc.gov/>





CHAPTER 1 Overview

The Assisted Reproduction Act (ARA) was promulgated and implemented on March 21, 2007 with the aim to facilitate the development of assisted reproduction technology (hereinafter referred to as the “ART”) and to safeguard the rights of infertile couples, children born under assisted reproduction and donors, as well as to uphold public ethics and health. According to the provisions of Article 27 of the ARA, assisted reproduction institutions are obliged to report relevant information regarding the number of patients undergoing treatment, success rates, causes of infertility, and the types of ART adopted. The competent authority shall establish an assisted reproduction database and periodically conduct statistical analyses as well as publish updated data accordingly.

Relevant laws and regulations governing the management of the practices and database of assisted reproduction in Taiwan has been gradually formulated since 1995. By early 1998, a total of 48 assisted reproduction institutions were established in Taiwan; by July, 2022, the number of licensed medical institutions had reached 95 in total. In accordance with the provisions of the ARA, these medical institutions are required to apply for approval from the competent authority to engage in ART practices and provision of acceptance, storage and provision of donated gametes. In order to maintain the quality of ART performed in medical institutions, the Health Promotion Administration, Ministry of Health and Welfare (hereinafter referred to the “HPA”) regularly carries out permit reviews on all licensed assisted reproduction institutions.

This report focuses on the statistical analysis of cases that had been treated in 93 assisted reproductive institutions in Taiwan (2020). In response to the government’s implementation of the “In Vitro Fertilization (commonly known as IVF) ART Subsidy Program” from July 1, 2021, the qualification for subsidy recipients was expanded, while Chapter 1 introduces the method of Assisted

reproductive technology (ART) and the meaning of the treatment cycle, and Chapter 2 covers all treatment cycles as a statistical basis and maintains an analysis framework over the years, including data on ART between spouses and data on recipients of sperm and egg donors. The third chapter has been adjusted, especially for the analysis of ART in ROC nationals. Chapter 4 presents an analysis of the trends in the ART practices from 1998-2020.



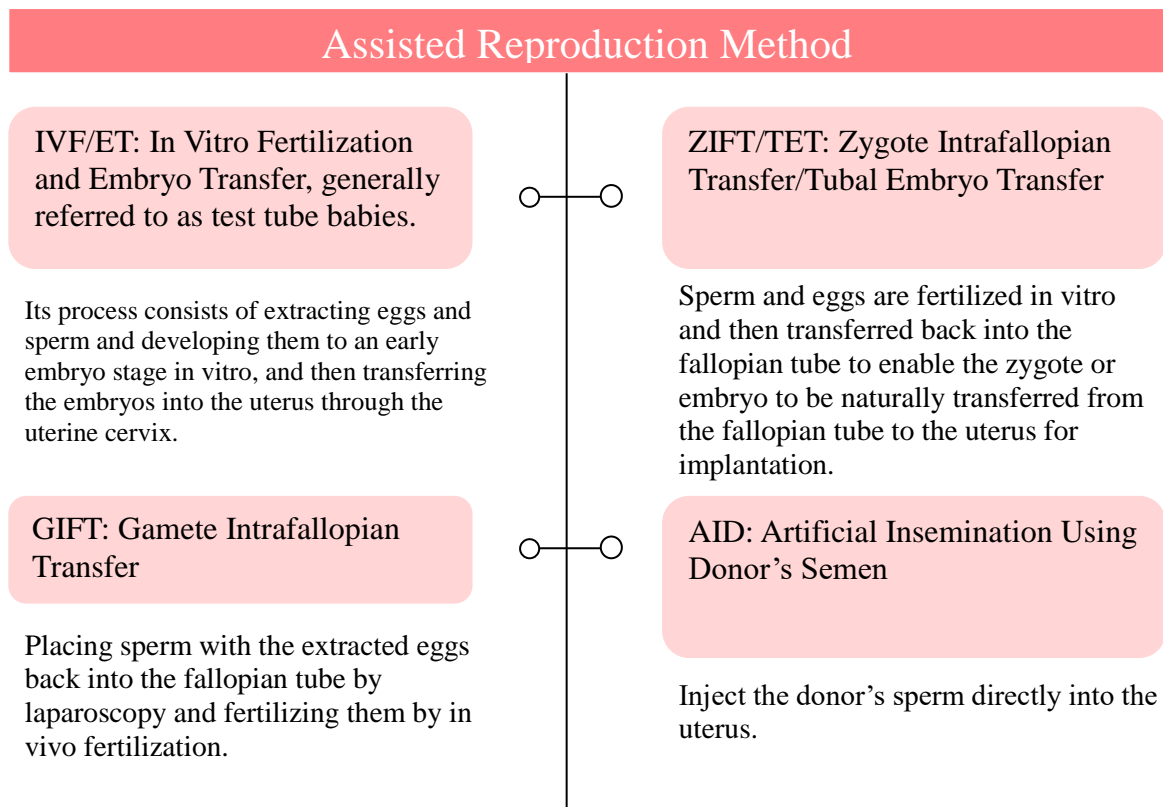
Section 1 Assisted Reproduction Treatment Cycles

As the process of assisted reproduction comprises a series of steps which need a period of around two weeks or more to complete, using “cycle” as the unit will be more appropriate than a single time point in analyzing the data. In the course of statistical analysis conducted under such calculation, a particular couple receiving assisted reproductive treatment may contribute more than one cycle.

The calculation of a cycle begins when ovarian stimulation is initiated or when an examination for embryo transfer is conducted. Its goal is to enable birth of healthy infants smoothly. Even though not all treatment cycles are successful and continue to give birth, they will still be included in the statistics of treatment cycles.

Section 2 Assisted Reproductive Technology

This section delves into several assisted reproductive methods and micromanipulation techniques used in ART.



Micromanipulation Technique

ICSI: Intracytoplasmic Sperm Injection.

Fertilizing the egg by injecting a single sperm into the egg cytoplasm.

Assisted Hatching

Thinning or punching a hole on the zona pellucida to assist in the embryo hatching and implantation.

Embryo biopsy

Retrieval of several cells from the embryo to perform genetic diagnosis, chromosome screening or other tests for embryo transfer reference.

The stipulation of Article 5 of the ARA does not apply to cases of Artificial Insemination Using Husband's Semen, except for the provisions prohibiting the embryo's gender selection and relevant penalties listed in Paragraph 3, Article 16 of the ARA. As the practice of AIH treatment is not limited to assisted reproduction institutions, these case data are not required to be reported. Hence, the term "assisted reproduction case" stated in this paper and all analytical data does not include assisted reproduction cases using the AIH procedure.

CHAPTER 2 Overall ART Cycle Statistics

The data collection period listed in this paper is based on the time point at which each cycle begins. All data compiled for analysis came from the regular data reported by the 93 assisted reproduction institutions of Taiwan in the year 2020.

Section 1 The number of Treatment Cycles

A total of 38,289 cycles (including the cycles in which egg retrieval or embryo transfer not performed) were conducted in 2020 (Table 1) ; 36,339 cycles used nondonor gametes and embryos (94.9%), and 1,950 cycles used donated sperm and eggs(5.1%).

Table 1 ART Cycles in 2020

Type of Cycle	Unit: Cycle	
	Number of ART Cycles	
Use of Donated Sperm and Eggs	1,950	
Use of Donor Sperm		351
Use of Donor Eggs		1,599
Use of Nondonor Sperm,Eggs or Embryos	36,339	
Total ART cycles	38,289	



Section 2 Ages of Women Receiving ART

The largest group of women receiving ART was that between 35 and 39 years of age, accounting for 38.4% of all ART cycles performed in 2020 (Table 2), among which women of age 38 and 40 had received the most ART cycles, accounting for 8.2% of the total ART cycles, followed by 7.8% in women of age 39. In addition, the age distribution of the recipient women using donor eggs is shown in Table 3, with 40-44 years old being the most, accounting for 35.9%.

Table 2 Age-Specific Recipient Women in ART in 2020

Age of Recipient Women	Number of Treatment Cycles	Unit: Cycle/%
		Percentage
<25	135	0.3
25-29	1,436	3.8
30-34	7,620	19.9
35-39	14,672	38.4
40-44	11,801	30.8
45-49	2,419	6.3
≥50	206	0.5
Total ART cycles	38,289	100.0

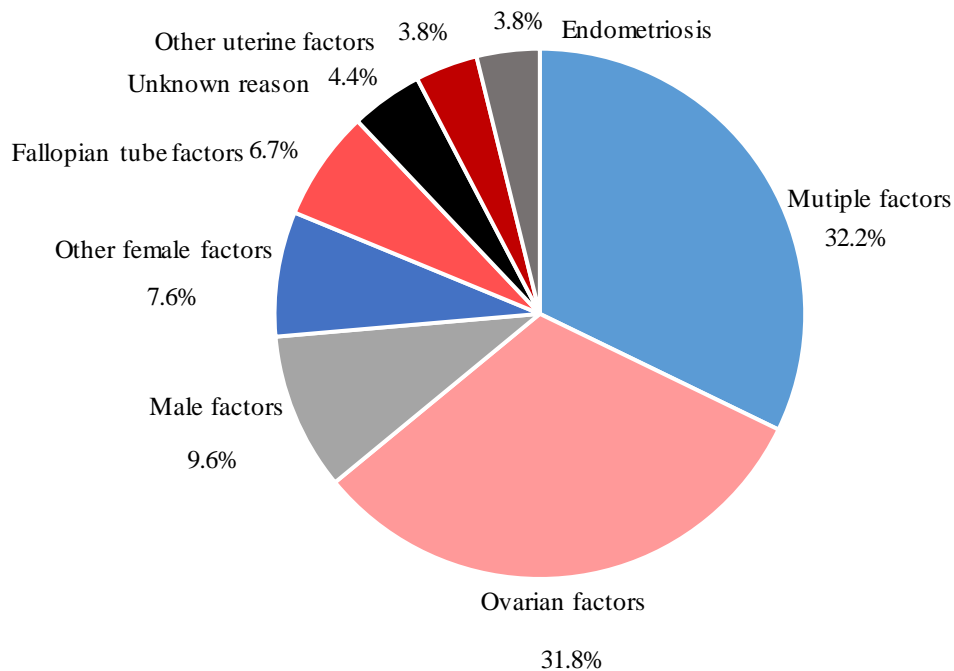
Table 3 Age-Specific Recipient Women Using Donated Eggs in ART in 2020

Age of Recipient Women	Number of treatment cycles	Unit: Cycle/%
		Percentage
<25	0	0
25-29	17	1.1
30-34	92	5.8
35-39	214	13.4
40-44	576	35.9
45-49	544	34.0
≥50	156	9.8
Total number of treatment cycles Using Donated Eggs	1,599	100.0

Section 3 Causes of Infertility

The causes of infertility in ART cases may be congenital, acquired or environmental. Figure 1 shows the causes of infertility, among which multiple factors occupies the highest proportion, accounting for 32.2% of all infertility cases, followed by 31.8% from ovarian factors ranking as second and 9.6% from male factors ranking as third (Figure 1). The causes of male infertility included lack of gonadal stimulating hormone, testicular function decline, obstruction of sperm conduit, and sexual dysfunction.

Figure 1 Causes of Infertility in ART in 2020
(Parameter: 38,289 treatment cycles)



Section 4: Types of ART Used

Among the types of ART used, the most popular procedure was the IVF method, accounting for 99.96% of the total. Other methods such as GIFT, ZIFT/TET, and AID accounted for less than 1% of the total. Since IVF is the most commonly used ART procedure, treatment conditions and pregnancy outcomes of IVF treatment cases in ROC nationals using nondonor eggs, sperm or embryos will be presented in Section 2 of Chapter 3.

Section 5: Micromanipulation Technique

The micromanipulation technique was applied to 78.0% of the 38,289 ART cycles performed (Table 4).

Table 4 Status of Micromanipulation Technique Application in ART Case Cycles in 2020

Cases Using Micromanipulation	The number of treatment cycles	Unit: Cycle/%
		Percentage
Procedure applied	29,863	78.0
Intracytoplasmic sperm injection (ICSI)	15,053	39.3
Assisted Hatching	11,253	29.4
Intracytoplasmic sperm injection (ICSI)	964	2.5
Preimplantation genetic testing for monogenic/ single-gene disorders (PGT-M)	85	0.2
Other (including combined multiple techniques)	2,508	6.6
Procedure not applied	8,426	22.0
Total ART cycles	38,289	100.0

Section 6 The Number of Transfer Cycles and Embryos Transferred

The number of assisted reproductive transfer cycles was 20,228, among which 20.9% were fresh embryos formed from nondonor sperm and eggs, 73.0% used frozen embryos formed from nondonor sperm and eggs, 0.6% used fresh embryos formed from donated sperm or eggs, and 5.5% used frozen embryos formed from donated sperm or eggs (Table 5).

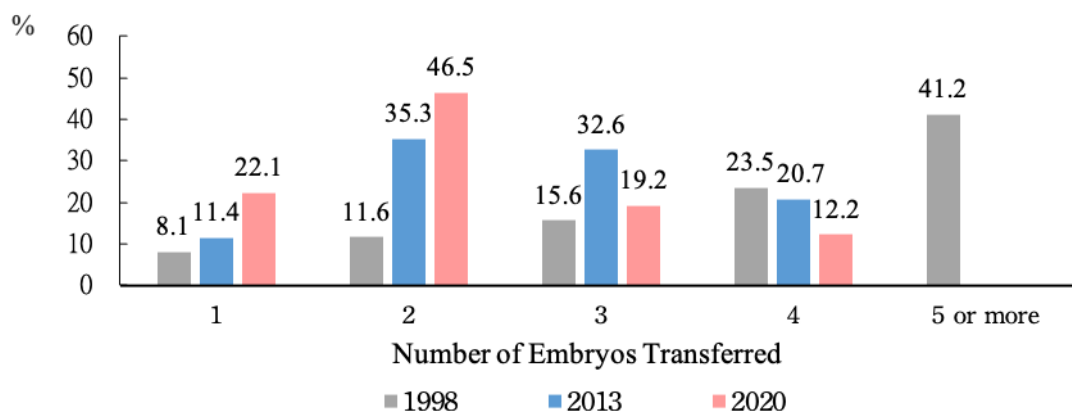
Table 5 Percentage of Transfer Type in ART in 2020

Transfer Type	Number of Transfer Cycles	Unit: Cycle/%
		Percentage
Using nondonor embryo	18,990	93.9
Fresh	4,218	20.9
Frozen	14,772	73.0
Using embryo formed from donated sperm or eggs	1,238	6.1
Fresh	129	0.6
Frozen	1,109	5.5
Total Number of Transfer Cycles	20,228	100.0

In order to provide guidance for ART institutions to avoid transferring too many embryos which may increase the probability of twins or multiple births that not only generates an economic burden on the family but also affects the social structure, the government promulgated and implemented the ARA in 2007 which specifically limits the maximum number of embryos transferred to be four in each ART. The Act further defines penalties for the violation of such law. In addition, because the risk of multiple pregnancy is higher than that of singleton and considering the safety of mothers and children, Regulations for Assisted Reproduction Institution Permit was revised to include “The ratio of women under the age of 35 who have had less than two embryos transferred within current permit period” into the monitoring index in 2014.

Assisted reproductive treatment cycles transferring two or less embryos accounted for 68.6% of all embryo transfer cycles in 2020 (72.7% in 2019 and 69.5% in 2018) (Fig. 2). In 2020, the rate of mild, moderate and severe ovarian hyperstimulation syndrome (OHSS) in treatment cycle was 2.72%, 0.11% and 0.02%, respectively, which was reported by the assisted reproduction institutions in Taiwan (Table 6).

Figure 2 Percentage of Number of Embryos Transferred in ART Cycles



*the government promulgated and implemented the ARA in 2007 which specifically limits the maximum number of embryos transferred to be four in each ART.

Table 6 Degree of ovarian hyperstimulation syndrome in ART Case Cycles in 2020

(Parameter: 38,289 treatment cycles)

Degree of OHSS	Unit: Cycle/%	
	Number of treatment cycles	Percentage
mild	1,040	2.72
moderate	42	0.11
severe	9	0.02
Total number of treatment cycles	1,091	2.85

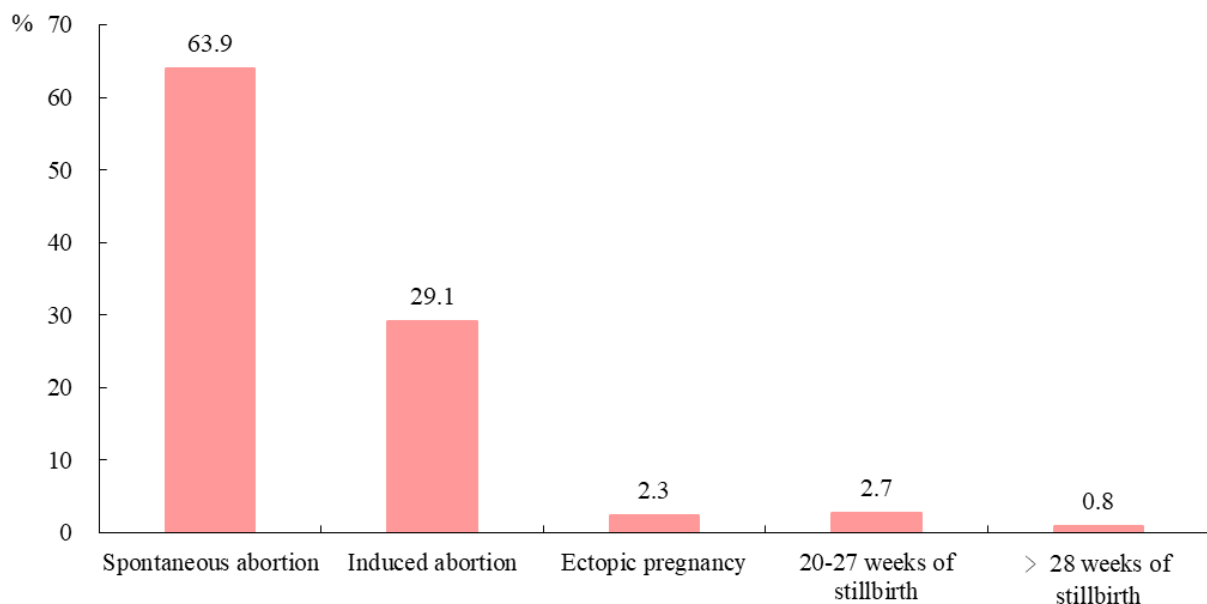
Section 7: Status of Pregnancy and Live Births

Of 38,289 ART cycles in 2020, 20,228 cycles were performed with transfer of at least one embryo, and 9,663 cycles successfully led to pregnancy of which 135 cycles underwent fetal reduction. Among the successful pregnancy cycles, 7,188 cycles resulted in live births. A total of 8,944 infants were born (24.1% of live birth cycles were multiple births) with a decrease of 1,734 infants born compared to 2019.

In the 2,475 cycles of pregnancy with no live birth, 1,582 cycles ended up with spontaneous abortions (63.9%), 720 cycles were treated by induced abortions (including absence of fetal heart sound before 20 weeks; 29.1%), 58 cycles were ectopic pregnancy (2.3%), and 88 cycles were stillbirth (3.5%) (a few cycles simultaneously had 2 or more conditions of spontaneous abortion, induced abortion, ectopic pregnancy, and either condition of stillbirth between 20 and 27 weeks or after 28 weeks) (Figure 3).

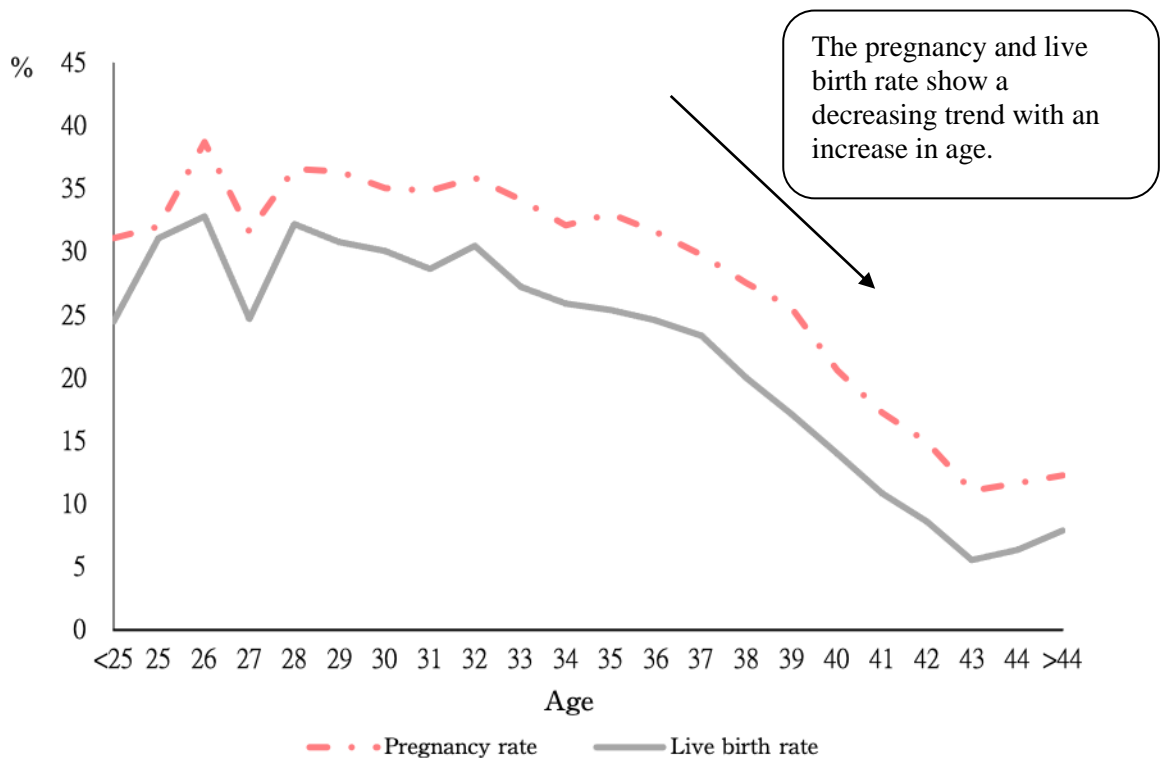
Figure 3 Analyses on Pregnancy with No Live Birth Cycles of ART in 2020

(Parameter: 2,475 pregnancy cycles without live birth cycles)



In 2020, the pregnancy rate of ART cycles was 25.2%, while the live birth rate of treatment cycles accounted for 18.8% (Note: When freezing all embryos and frozen-thawed embryo transfer was used, the embryo freezing and thawed embryo transfer were separately counted as 1 treatment cycle, this might have resulted in underestimation of the aforementioned pregnancy and live birth rate). The pregnancy and live birth rate among the age-specific women undergoing ART are shown in Figure 4. As the number of ART cycles in women of “age less than 25” and “age over 44” were too small, analysis on these two groups was not carried out for individual ages and was performed in a combined fashion. The pregnancy and live birth rate after age 34 decrease as the age of the female receiving the treatment increases.

Figure 4 Correlation between Women's Age and Pregnancy/Live Birth Rate of ART in 2020
(Parameter: 38,289 treatment cycles)



This section additionally analyzes the success rate, pregnancy outcomes and related issues of assisted reproduction.

Analysis on seven types of success rates:

Due to the advancement of ART in recent years, more and more cases were carried out by freezing all embryo, which has increased the number of treatment cycles. However, not all cycles led to the transfer of embryo; therefore, only the cumulative pregnancy rate and the cumulative live birth rate during the treatment cycle can truly reflect the quality of ART.

Figure 5 shows the results using the seven different methods of measuring the success rate of ART, including: pregnancy rate of treatment cycles, live birth rate of treatment cycles, cumulative pregnancy rate, cumulative live birth rate, pregnancy rate of transfer cycle, live birth rate of transfer cycle and the singleton live birth rate of the transfer cycle, which are described as follows:

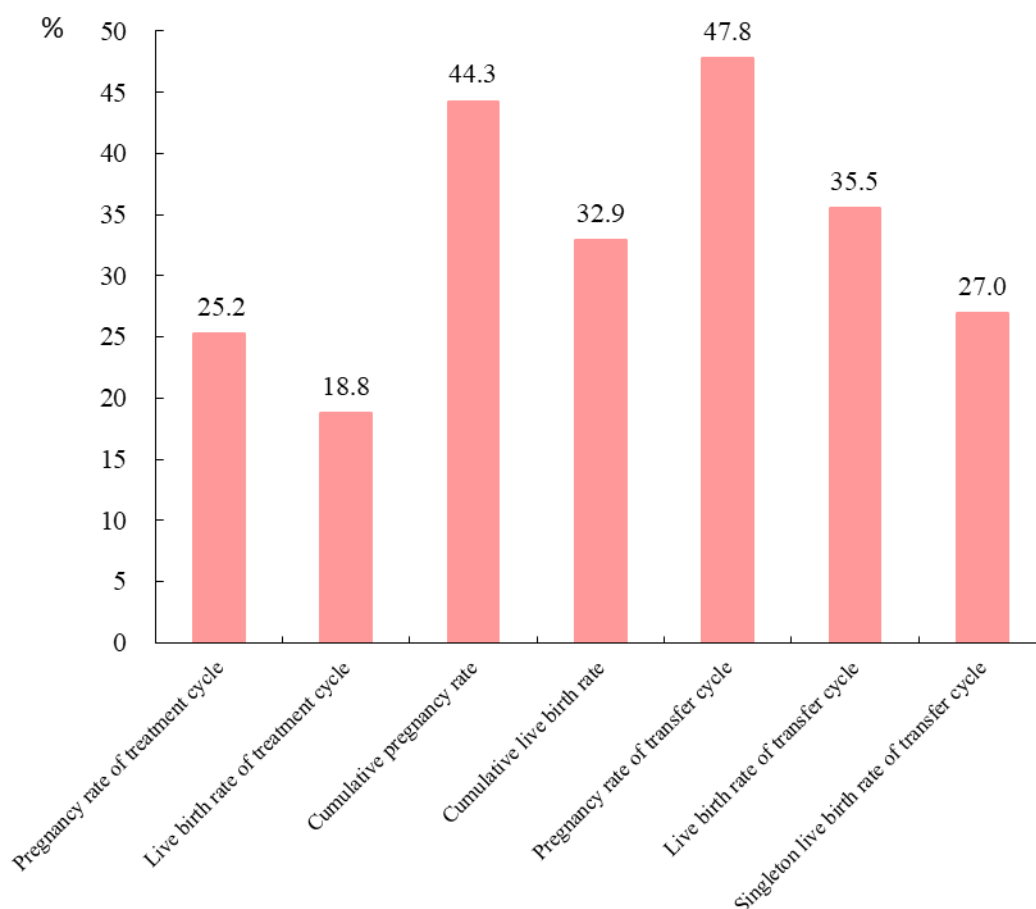
1. Pregnancy rate of treatment cycle: this rate is generally referred to as the “pregnancy rate.” It refers to the percentage of pregnancies during the ART cycle. Since some pregnancies resulted into spontaneous abortion, stillbirth, etc., this rate will be higher than the live birth rate for a treatment cycle. The pregnancy rate of treatment cycles was 25.2% in 2020.
2. Live birth rate of treatment cycle: this rate is generally referred to as the “live birth rate”, which refers to the percentage of live births during the ART cycle (regardless of whether there are singleton or multiple births, both are considered as only one live birth). This is the ratio that most people care about because it presents the opportunity to get a live birth infant by assisted reproduction. The live birth rate of treatment cycles was 18.8% in 2020.
3. Cumulative pregnancy rate: It reflects the percentage of pregnancy rate in each egg retrieval cycle; it is calculated as:
$$\frac{\text{the number of fresh embryo pregnancy cycles} + \text{the number of frozen embryo pregnancy cycles}}{\text{number of (fresh embryo + frozen embryo) pregnancy cycles}} \div \frac{\text{number of fresh embryo treatment cycles} + \text{number of (fresh embryo + frozen embryo) treatment cycles}}{\text{number of (fresh embryo + frozen embryo) treatment cycles}}$$

frozen embryo) treatment cycles]. The cumulative pregnancy rate was 44.3% in 2020.

4. Cumulative live birth rate: It reflects the percentage of live births in each egg retrieval cycle (regardless of whether there are singleton or multiple births, both are considered as only one live birth); it is calculated as [the number of fresh embryo live birth cycles + the number of frozen embryo live birth cycles + number of (fresh embryo + frozen embryo) live birth cycles] ÷ [number of fresh embryo treatment cycles + number of (fresh embryo + frozen embryo) treatment cycles]. The cumulative live birth rate was 32.9% in 2020, and the cumulative live birth rate in women below 38 years of age was 51.6%.
5. Pregnancy rate of transfer cycle: the percentage of pregnancies during the ART transfer cycles. The pregnancy rate of transfer cycles was 47.8% in 2020. Among them, the pregnancy rate of fresh embryo transfer was 39.1%, and the pregnancy rate of frozen embryo transfer was 50.1%.
6. Live birth rate of transfer cycle: the percentage of live births during the ART transfer cycles. The live birth rate of transfer cycles was 35.5% in 2020, in which the live birth rate of fresh embryo transfer was 27.4%, and the live birth rate of frozen embryo transfer was 37.7%.
7. Singleton live birth rate of transfer cycle: the percentage of singleton live births during the ART transfer cycles. Singleton live birth is an important measure of the success of assisted reproduction techniques, since delivery of a single infant has lower neonatal health risks, including preterm birth, low birth weight, birth defects and infant mortality, as compared to multiple births. The singleton live birth rate of transfer cycle was 27.0% in 2020.



Figure 5 Analysis of ART Success Rate in 2020



Section 8: Status of New-Born Infants

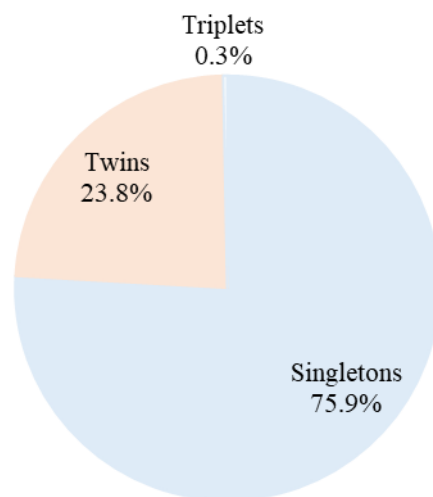
1. The number of live births

Of the 7,188ve birth cycles, 75.9% were singletons, 23.8% were twins, and 0.3% were triplets (Figure 6).

The patients undergoing ART treatment in 2020 gave birth to a total of 8,944 infants, among which 4,395 were boys and 4,549 were girls (Table 7).

Figure 6 Percentages of Fetus Numbers of the ART Live Birth Cycles in 2020

(Parameter: 7,188 live birth cycles)



2. Weight, gestational weeks and congenital defect

Of 8,944 live births, infants with birth weight less than 1,500 grams accounted for 3.9%, between 1,500 and 2,499 grams accounted for 29.8%, and greater than or equal to 2,500 grams accounted for 66.3%; infants born before 37 gestational weeks accounted for 35.6%, between 37 and 41 weeks accounted for 64.3%, greater than or equal to 42 weeks accounted for 0.1% (Table 7). The proportion of infants with apparent congenital defects was 1.0%, birth weight under 1,500 grams and 2,500 grams or above birth defect rates were 5.1% and 0.6%, respectively (Table 8).



Table 7 Weight and gestational weeks of ART Born Infants in 2020

(Total Number of Live Births: 8,944)

		Unit: Number/%	
Infant status		Number of live births	Percentage
Gender	Male	4,395	49.1
	Female	4,549	50.9
Weight	<1,500 g	351	3.9
	1,500-2,499g	2,666	29.8
	≥ 2,500g	5,927	66.3
Gestational weeks	<37weeks	3,182	35.6
	37-41weeks	5,757	64.3
	≥ 42weeks	5	0.1
Total		8,944	100.0

Table 8 The number of infants with congenital birth defect born from ART and their proportion among live births in 2020.

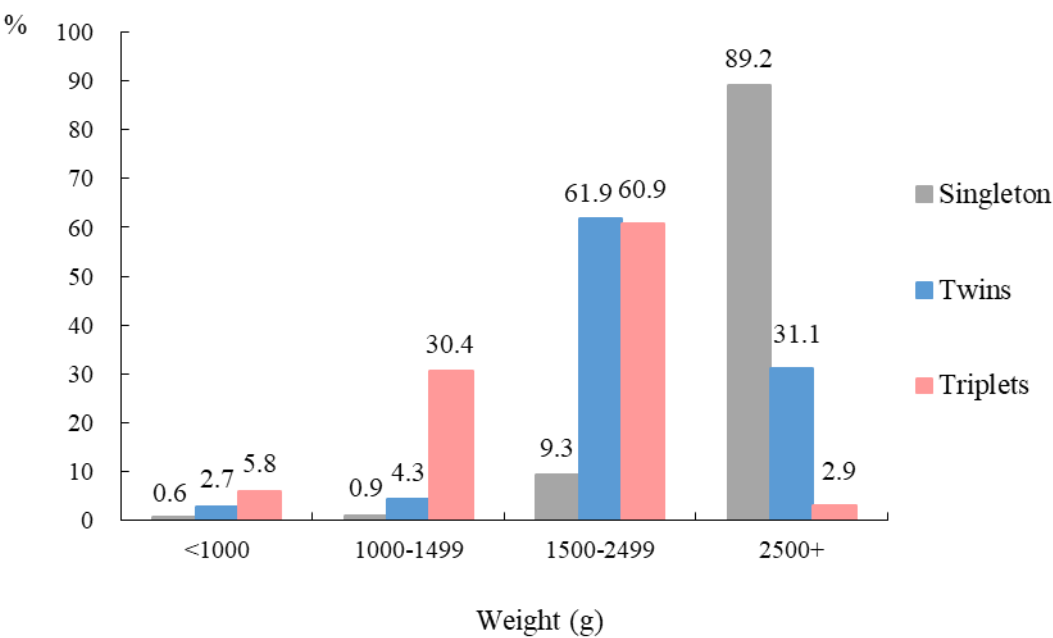
(Total Number of Live Births: 8,944)

		Unit: Number/%	
Weight	Apparent or visible congenital defects	Number of live births	Percentage
<1,500 g	18	351	5.1
1,500-2,499g	37	2,666	1.4
≥ 2,500g	35	5,927	0.6
Total	90	8,944	1.0

3. Correlation between the number of births (single or multiple) and birth weight

Most (89.2%) of the singletons delivered had birth weight more than 2,500 grams. The largest proportion of twins born had birth weight between 1,500 and 2,499 grams, followed by 2,500 grams or more, accounting for 61.9% and 31.1%, respectively. The birthweight of triplets born weighing less than 1,000 grams accounted for 5.8%, between 1,000 and 1,499 grams were 30.4%, between 1,500 and 2,499 grams were 60.9% and 2,500 grams and above were 2.9%. Statistical analysis of the results showed a negative correlation between the number of births and the weight of the infants ($P < 0.0001$), that is, the greater the number of births, the more likely it is to deliver low birth weight infants (Figure 7).

Figure 7 Correlation between Number of Births and Birth Weight of Live Birth Cycles in 2020
(Parameter: 8,944 live birth infants)



CHAPTER 3 ART in nationals of ROC

Section 1: ART in nationals of ROC

If one of the couples receiving the treatment is the national of ROC , he/she will be included in the analysis of this chapter, which excluding those who are both foreign nationals. This section describes the statistics of couples using various treatments for assisted reproduction using nondonor sperm, eggs or frozen embryos (Including the use of spouse's sperm and eggs and the use of donor sperm and eggs by one party, but excluding data on AIH between spouses.)

1. Age distribution

Among the 38,289 treatment cycles of ART in 2020, there were 37,499 cycles of ART in nationals of ROC, accounting for 97.9%, of which 35,833 treatment cycles were those who used nondonor sperm and eggs (95.6%), and 1,666 cycles were those who used donor sperm and eggs (4.4%). (Table 9) The age distribution of women receiving treatment is shown in Table 10, which is similar to the age distribution of women undergoing all kinds of ART (Table 2 of page 55).

Table 9 ART cycles in nationals of ROC in 2020

Type of Cycle	Number of ART Cycles	Unit: Cycle
		Percentage
Use of Donated Sperm and Eggs	1,666	4.4
Use of Donor Sperm	316	0.8
Use of Donor Eggs	1,350	3.6
Use of Nondonor Sperm,Eggs or Embryos	35,833	95.6
Total number of treatment cycles	37,499	100

Table 10 Age-Specific Recipient Women in ART in nationals of ROC in 2020

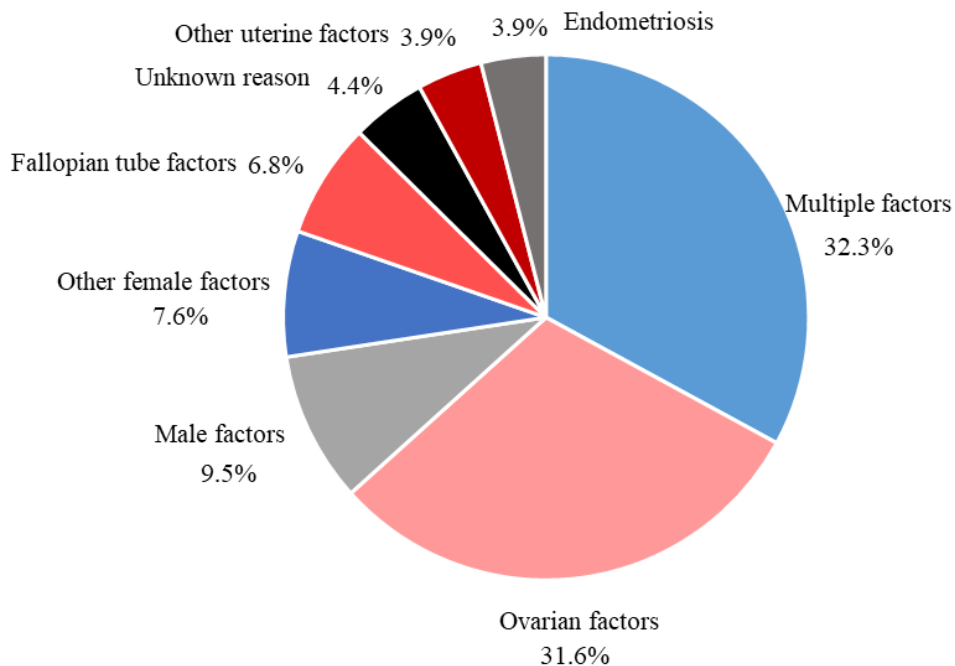
Age of Recipient Women	The Number of Treatment Cycles	Unit: Cycle/%
		Percentage
<25	130	0.3
25-29	1,388	3.7
30-34	7,443	19.9
35-39	14,442	38.5
40-44	11,568	30.9
45-49	2,340	6.2
≥50	188	0.5
Total number of treatment cycles	37,499	100.0

2. The causes of infertility

Figure 8 shows the causes of infertility, among which multiple factors occupy the highest proportion, accounting for 32.3% of all infertility cases, followed by 31.6% from ovarian factors ranking as second and 9.5% from male factors ranking as third. Similar to the causes of infertility of all cases receiving ART (Figure 1 of page 56).

Figure 8 Causes of Infertility in ART in nationala of ROC in 2020

(Parameter: 37,499 treatment cycles)



3. The Number of Transfer Cycles and Embryos Transferred

The number of assisted reproductive transfer cycles was 18,894, among which 19.3% were fresh embryos formed from nondonor sperm and eggs, 75.2% used frozen embryos formed from nondonor sperm and eggs, 0.6% used fresh embryos formed from donated sperm or eggs, and 4.9% used frozen embryos formed from donated sperm or eggs (Table 11).

Table 11 Percentage of Transfer Type in ART in nationals of ROC in 2020

Transfer Type	Number of Transfer Cycles		Percentage
Using nondonor embryo	17,859		94.5
Fresh		3,650	19.3
Frozen		14,209	75.2
Using embryo formed from donated sperm or eggs	1,035		5.5
Fresh		110	0.6
Frozen		924	4.9
Total Number of Transfer Cycles	18,894		100

4. Status of Pregnancy and Live Births

Among the 37,499 treatment cycles of ART in nationals of ROC (including the use of nondonor sperms/eggs and donated sperms/eggs), there were 8,836 cycles of pregnancy, 122 cycles of termination, 6,551 cycles of live birth, and a total of 8,164 babies were born.

5. Status of New-Born Infants

Among the 6,551 live birth cycles of ART in domestic women, 68.8% were singletons, 30.8% were twins, and 0.4% were triplets. A total of 8,164 babies were born. Of these, 4,005 were boys and 4,159 were girls.



Section 2: Nondonor ART in nationals of ROC

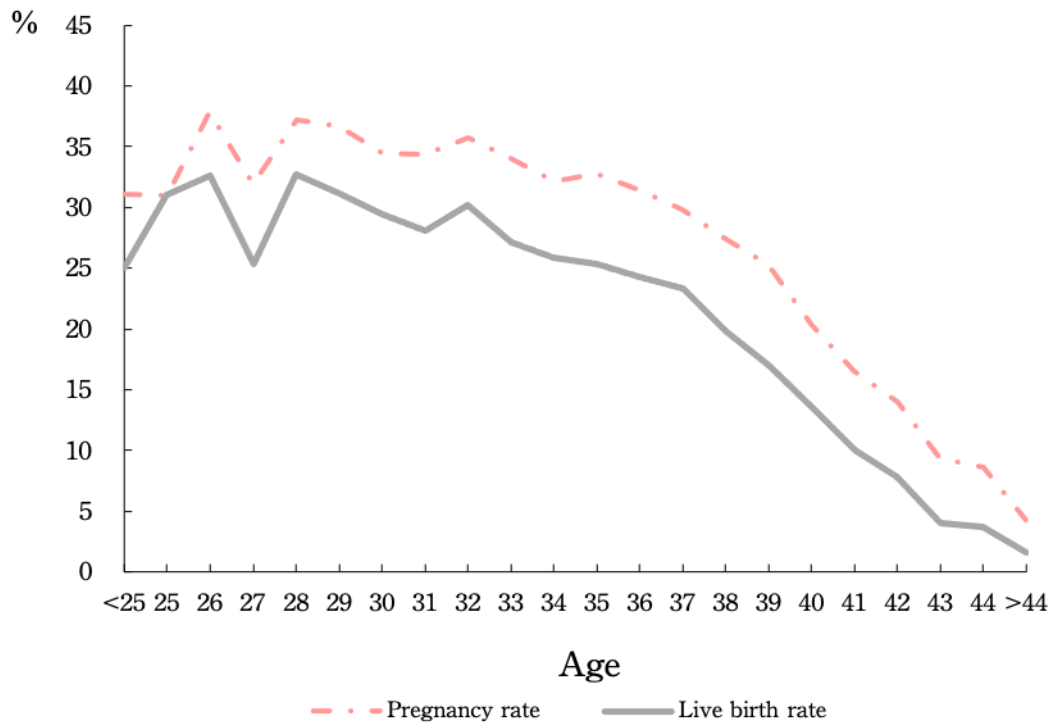
This section deals with the analysis on nondonor ART in nationals of ROC through IVF/ET.

1. The pregnancy rate and live birth rate in nationals of ROC at different ages using nondonor sperm and eggs.

There were 35,833 cycles of ART in nationals of ROC using nondonor sperm and eggs. The pregnancy rate and live birth rate of ART cycles using nondonor eggs, sperm or embryos were 24.7% and 18.3%, respectively. (Note: When freezing all embryos and frozen-thawed embryo transfer was used, the embryo freezing and thawed embryo transfer were separately counted as 1 treatment cycle, this might have resulted in underestimation of the aforementioned pregnancy and live birth rate). The correlation between the age of women undergoing ART and both the pregnancy rate and the live birth rate shows that the pregnancy rate and live birth rate of women of age 34 and above decreased as the age increases, and as the number of ART cycles in women of age less than 25 and above 44 were too small, analysis on these two groups was not carried out for each individual ages and was performed in a combined fashion (Figure 9).



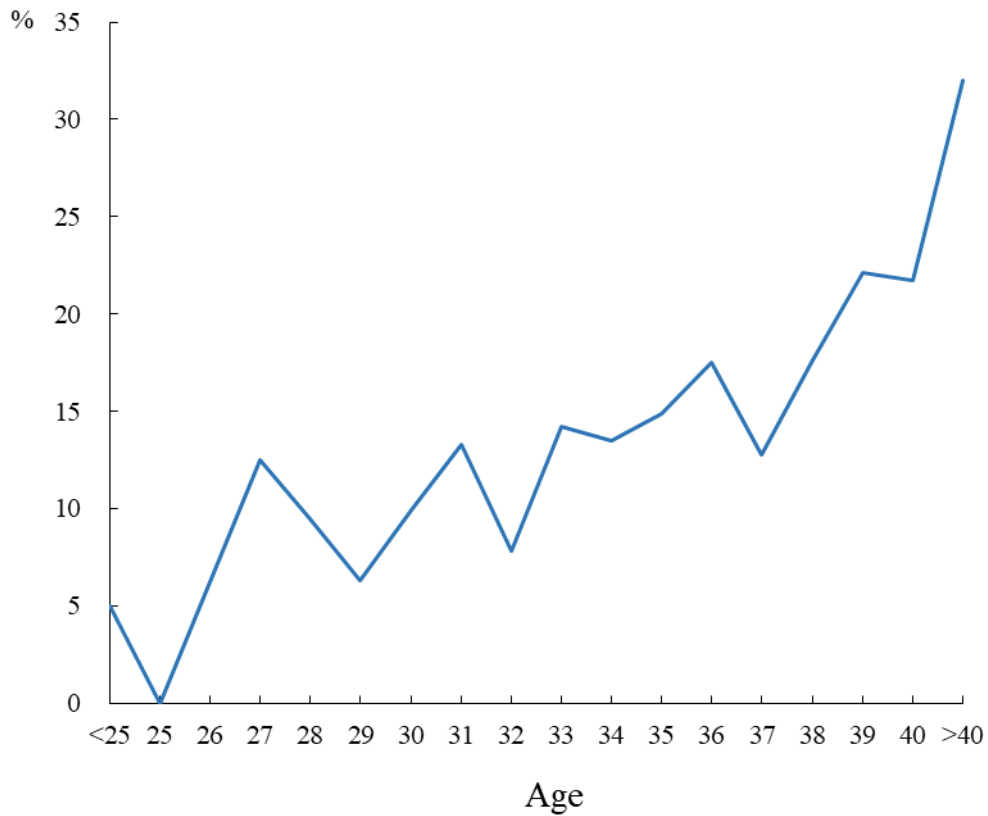
Figure 9 Correlation between Women's age and Rates of pregnancy and Live Birth, of Nondonor ART in nationals of ROC in 2020
(Parameter: 35,833 treatment cycles)



2. The miscarriage rate of each age in nationals of ROC by using nondonor sperm and eggs

Following a successful pregnancy by nondonor ART transfer cycle, the miscarriage rate of women of age 34 and above increased with age, among which the average miscarriage rate of women of age 40 and above was 32.0% (Figure 10).

Figure 10 Correlation between Age and Miscarriage Rate of the Pregnant Women after ART Using Nondonor Eggs, Sperm, or Embryos in nationals of ROC in 2020
(Parameter: Number of pregnancy cycles was 8,418 from nondonor ART)

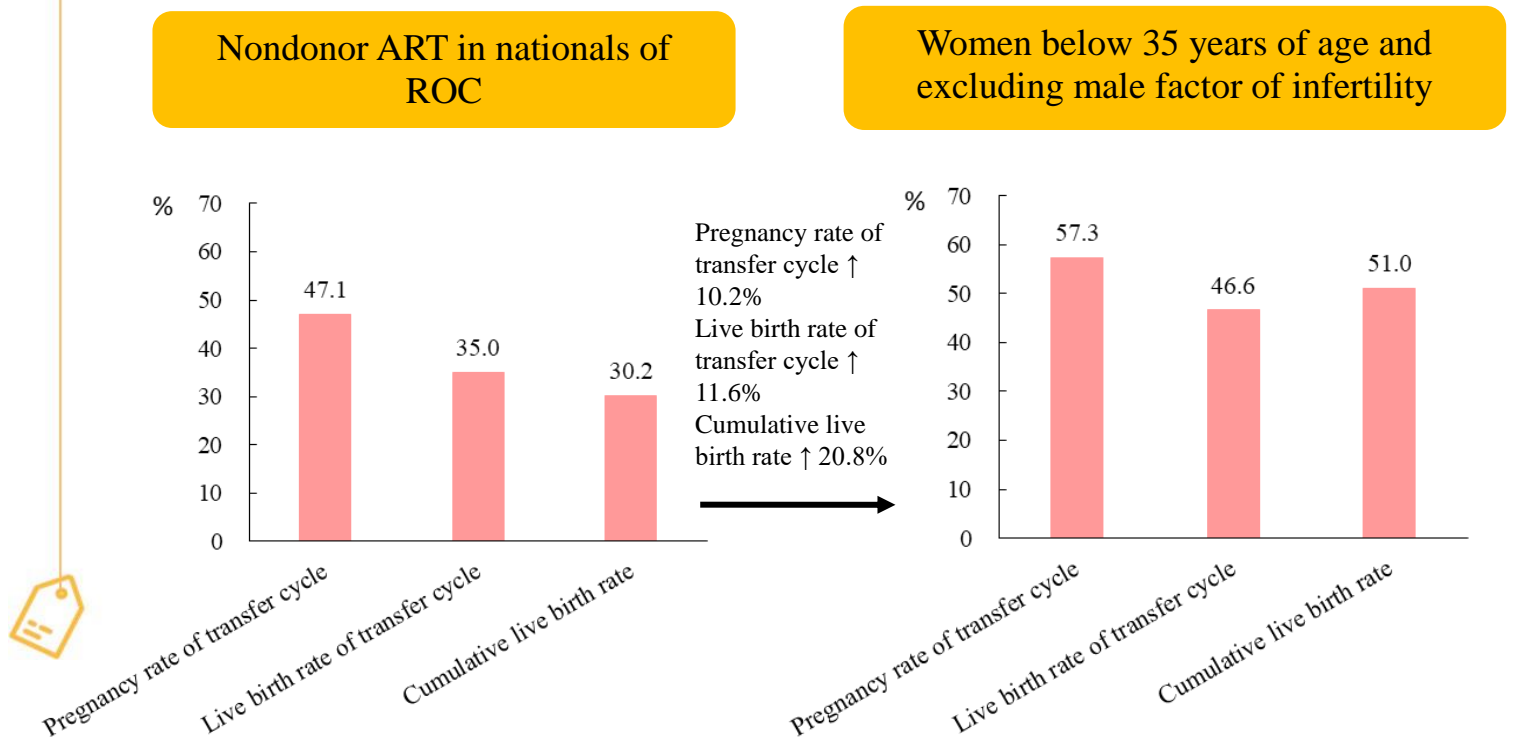


3. Pregnancy rate and live birth rate

Among the 35,833 treatment cycles of ART in nationals of ROC using nondonor sperm and eggs, there were 17,859 cycles of transfer, with 8,418 cycles of pregnancy and 6,250 cycles of live birth, with a pregnancy rate per transfer of 47.1% and live birth rate per transfer of 35.0%. The cumulative live birth rate was 30.2%, and the cumulative live birth rate of women less than 38 years old was 48.9%. The proportion of singletons accounted for 75.2%, twins accounted for 24.4%, and triplets or more accounted for 0.4%.

In addition, when infertility cases due to male factors were excluded in women under the age of 35, the pregnancy rate per transfer, live birth rate per transfer and cumulative live birth rate increased to 57.3%, 46.6% and 51.0%, respectively (Figure 11).

Figure 11 Nondonor ART success rate in overall cases in nationals of ROC vs. in women below 35 years of age and excluding cases with male infertility factors in nationals of ROC in 2020.



4. The number of embryos transferred and live birth rate

(1) Number of transferred embryos

Among the 17,859 transfer cycles (including 3,650 cycles of transfer of fresh embryos and 14,209 cycles of transfer of frozen embryos) in ART in nationals of ROC in 2020, 67% of them were transferred with less than 2 embryos in ART transfer cycle using the nondonor sperm and eggs (Figure 12), with 82.6% of women age 35 and below (Figure 13), and 58.3% of women age 36 and over (Figure 14).

Figure 12 Percentage of Number of embryos transfer using nondonor sperm and eggs in nationals of ROC in 2020

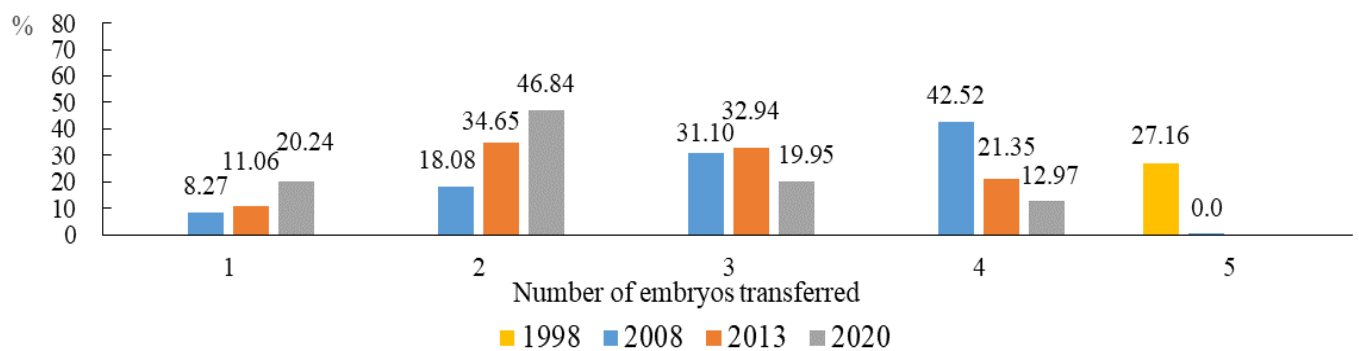


Figure 13 Percentage of Number of using Nondonor Embryos Transferred in women of 35 years and below in nationals of ROC in 2020

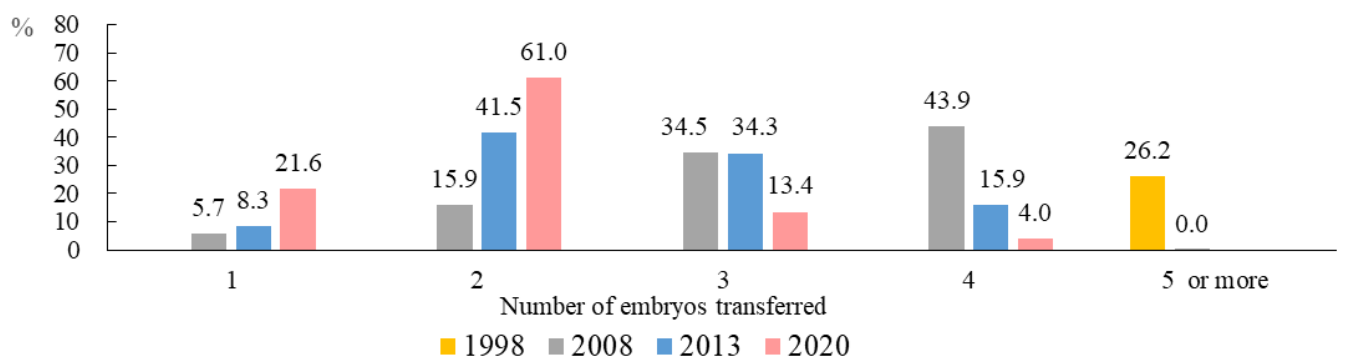
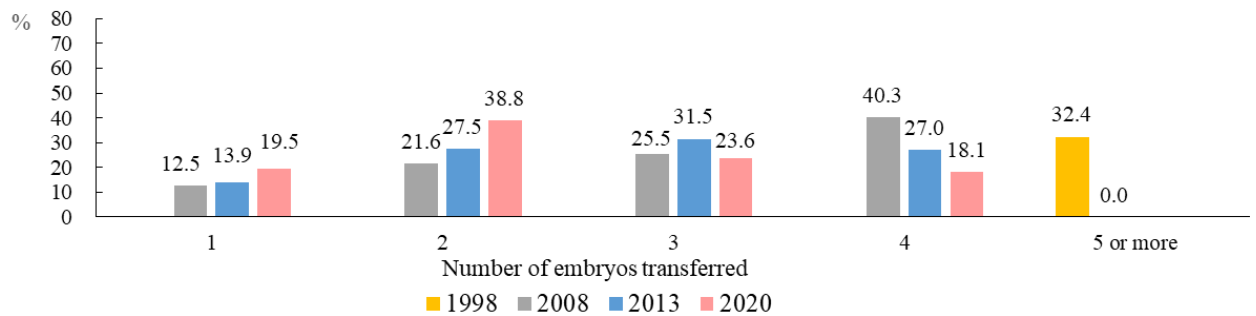


Figure 14 Percentage of Number of using Nondonor Embryos Transferred in women of 36 years and above in nationals of ROC in 2020



(2) The number of embryos transferred in live birth cycles

In the 6,250 nondonor IVF cycles with live birth in nationals of ROC, the largest proportion (53.0%) of the cycles had two embryos transferred (Figure 15). In general, the more embryos are transferred, the greater were the chances of delivering two or more infants. It was also observed that the live birth rate after transferring two embryos transferred was 39.6% (Figure 16), but the multiple birth rate in the live birth cycles after transferring two embryos was also as high as 31.6% (Figure 17).

Figure 15 The Proportion of Live Birth Cycles Based on the Number of Embryos Transferred during Nondonor IVF Procedure in nationals of ROC in 2020.
(Parameter: 6,250 live birth cycles)

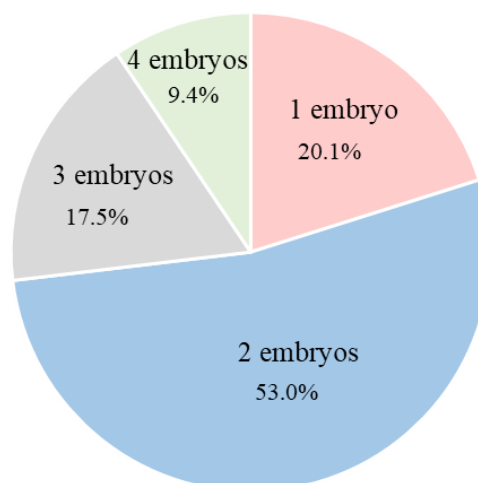


Figure 16. Correlation Between Live Birth Rates and Number of Embryos Transferred during Nondonor IVF Procedure in nationals of ROC in 2020.
(Parameter: 6,250 live birth cycles)

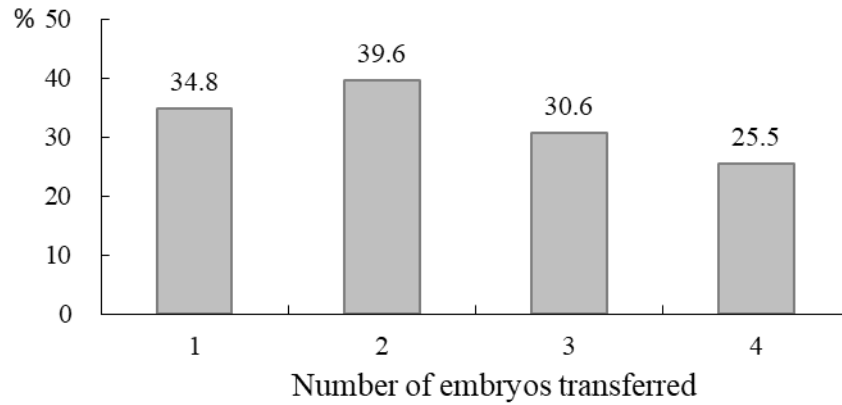
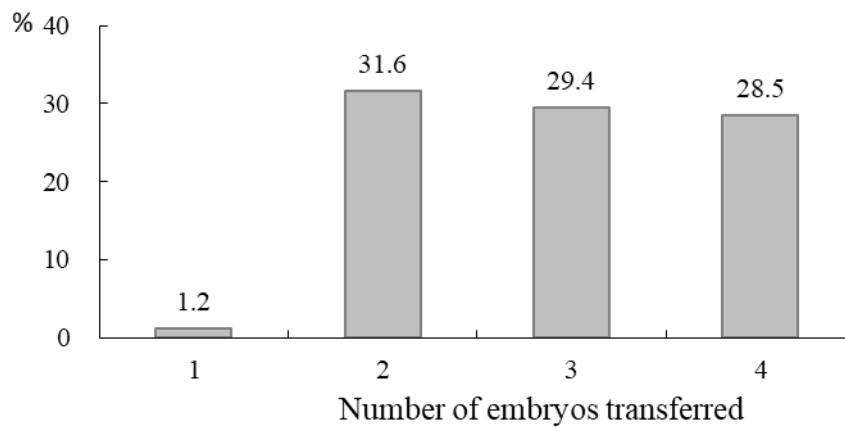


Figure 17 Correlation between Multiple Birth Rates and Number of Embryos Transferred during Nondonor IVF Procedure in nationals of ROC in 2020.



5. Receiving Fresh and Frozen Embryo Transfer in Nondonor ART in nationals of ROC

In ART cycle of using nondonor sperm and eggs in nationals of ROC, a total of 3,650 cycles of transfer of fresh embryos and a total of 14,209 cycles of transfer of frozen embryos were compared. The statistical results showed that the pregnancy rate of fresh and frozen embryo transfer cycles was 38.6% and 49.6%, respectively, and live birth rate was 26.9% and 37.3%, respectively, and statistical significant difference was found between the two groups in both pregnancy and live birth rates ($P < 0.0001$) (Figure 18).

The pregnancy and live birth rates were evidently seen to be related to the age of the women, especially the significantly lower success rate observed in women over 40 years of age. The live birth rate for fresh embryo transfer in women under 35 was 41.2%, but decreased to 7.2% in women over 40. Similarly, the live birth rate for frozen embryo transfer decreased from 49.3% in women under 35 to 16.8% in women over 40. (Figure 19)

Figure 18 Comparison of the Success Rate between Fresh Embryo and Frozen Embryo Transfer from Nondonor Gametes in nationals of ROC in 2020

(Parameter: 17,859 cycles; 3,650 cycles of fresh embryo transfer; 14,209 cycles of frozen embryo transfer)

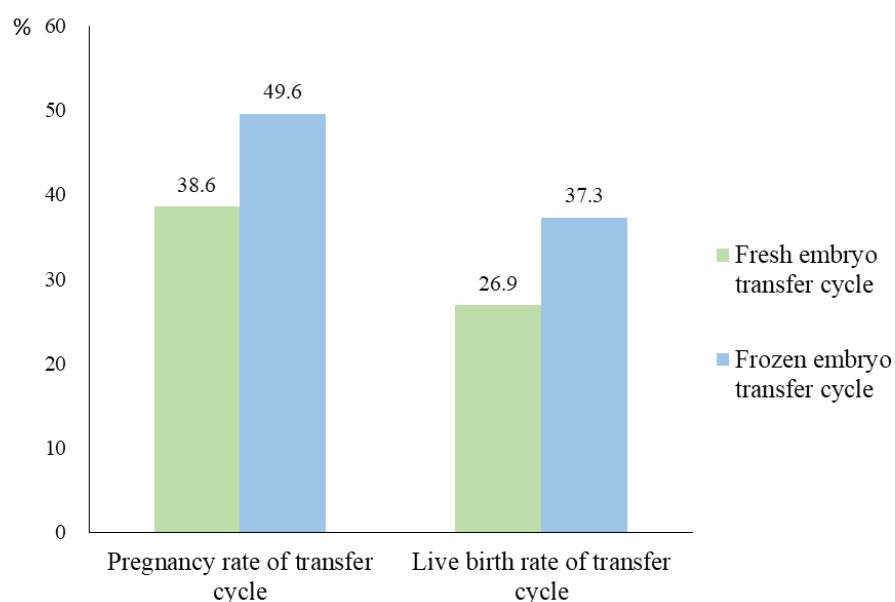
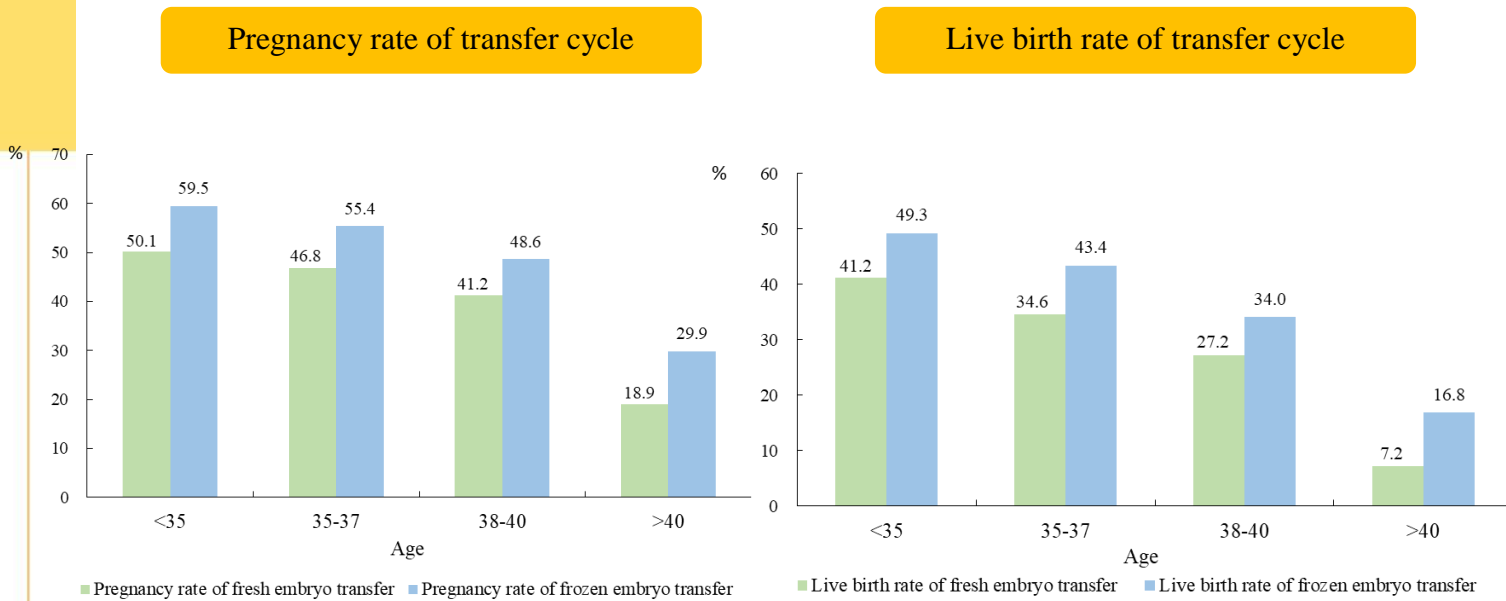
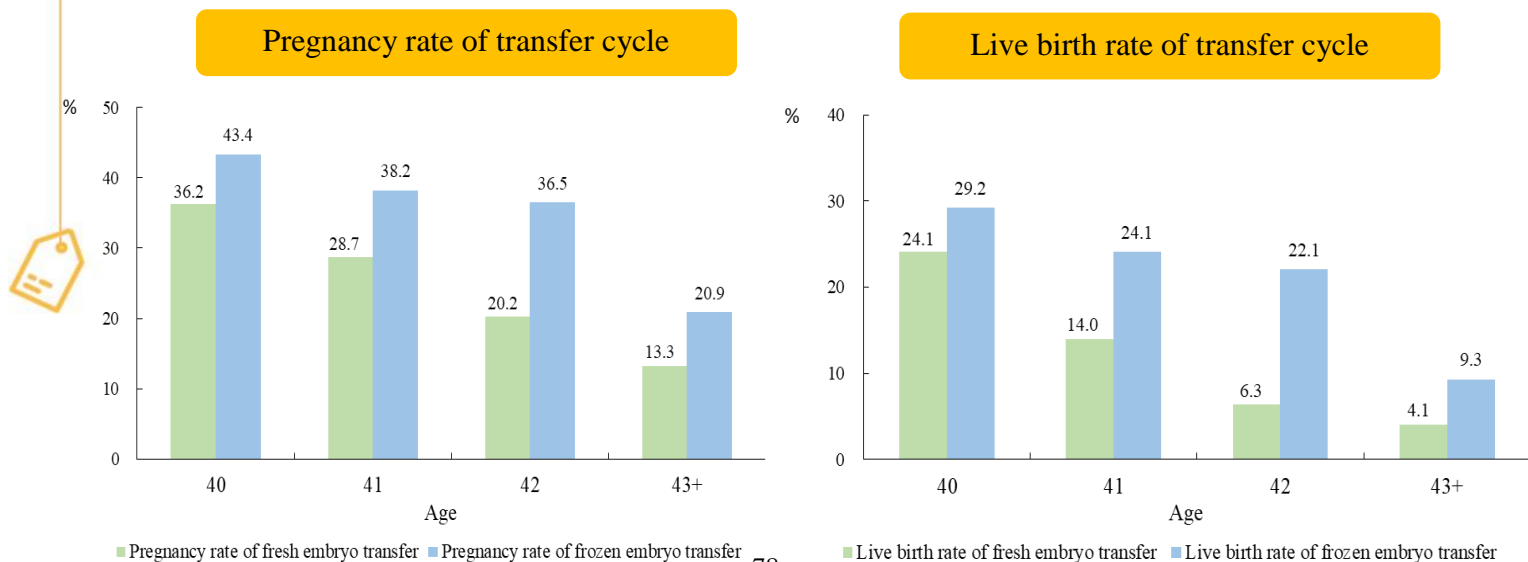


Figure 19 Age-Specific Pregnancy and Live Birth Rate of Fresh and Frozen Embryo Transfer from Nondonor Gametes in nationals of ROC in 2020



This section delineates the analysis on women of 40 years and above (5,607 transfer cycles). The pregnancy rate of fresh and frozen embryo transfer in women of age 40 was 36.2% and 43.4%, respectively; however, their live birth rate dropped to 24.1% and 29.2%, respectively. After the age of 42, the success rate of the transfer cycles decreased significantly. The pregnancy rate of fresh and frozen embryo transfer at age 43 and above was 13.3% and 20.9%, respectively, while the live birth rate was only 4.1% and 9.3%, respectively (Figure 20). Overall, the pregnancy rate and live birth rate of frozen embryo cycles in all age groups were higher than those of the fresh embryo cycles.

Figure 20 Age-Specific Pregnancy and Live birth Rate of Fresh and Frozen Embryo Transfer in Women at Age 40 and above from Nondonor Gametes in nationals of ROC in 2020



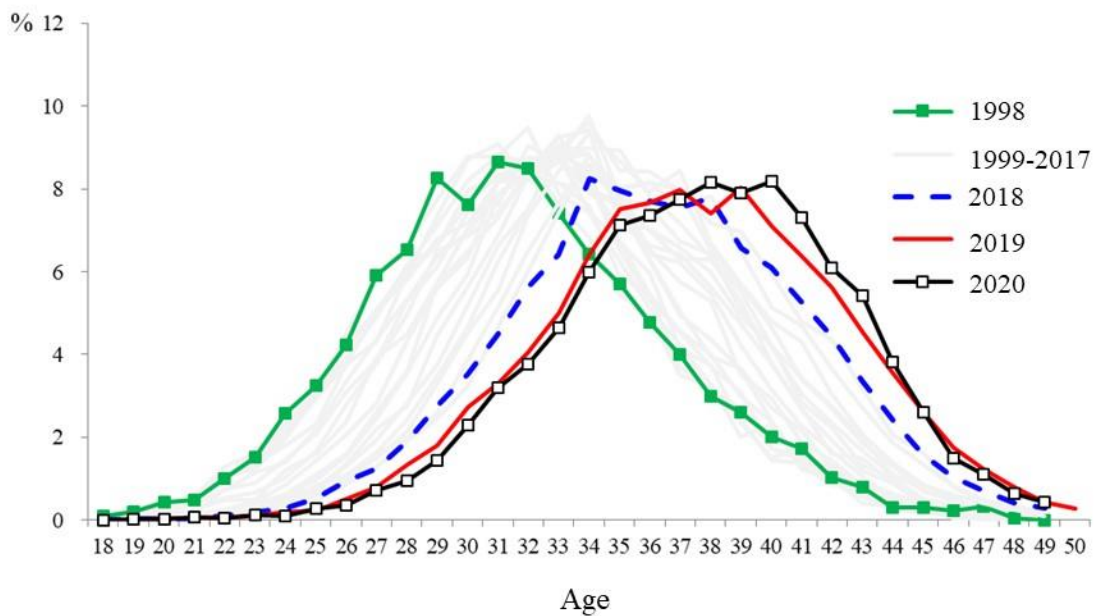
CHAPTER 4 Trend of Assisted Reproduction (1998–2020)

Section 1 Trends in ART Cycles

1. Patient age

The age distribution of women receiving assisted reproduction shows an increasing trend from 1998 to 2020. The median age and average age of recipient women in 1998 was 32 and 32.7, respectively; in 2018 was 37 and 37.3 years, respectively; in 2019 was 38 and 37.5, respectively; and in 2020 was 38 and 37.8, respectively. (Figure 21)

Figure 21 Age Distribution of Women receiving ART from 1998 to 2020



2. The number of treatment cycles, live birth cycles and live births

This section describes the number of treatment cycles, live birth cycles and live births between 1998 and 2020. From 2001 to 2004, the number of treatment cycles was maintained between 6,500 and 6,700, with the exception of the significantly low treatment cycles in 2003 that might have been due to the outbreak of severe acute respiratory syndrome (SARS). After 2005, the treatment cycles exceeded 7,200 showing an annual increasing trend. In 2020, due to the severe special infectious pneumonia (COVID-19) pandemic, people's willingness to seek medical treatment was reduced, coupled with the border control from March 19, 2020, which prohibited foreign travelers from coming to Taiwan, the number of treatment cycles was 38,289 cycles, a decrease of 13.5% compared to 44,256 cycles in 2019 (Table 12).

The number of live birth cycles was maintained between 1,500 and 1,800 cycles before 2004. After 2005, this number exceeded 2000 cycles, which can be attributed to the increase in the number of ART cycles after 2005 and the advancement in assisted reproductive technology in Taiwan. The number of live births remained stable between 2001 and 2004, with approximately 2,400 to 2,600 newborns born each year. From 2005 to 2007, about 2,800 to 2,900 newborns were born each year, and this figure reached 3,093 in 2008 and 8,944 in 2020, with an decrease of 1,734 newborns compared with 10,678 in 2019 (Table 12 and Figure 22).

Furthermore, to understand the general situation of the use of ART in nationals of ROC, since 2008, the number of treatment cycles, the number of live birth cycles and the number of live births to couples receiving AR (if either party is a national of the ROC) have been listed. The number of treatment cycles in 2020 was 37,499, an increase of nearly 4.8% compared with 35,795 cycles in 2019, but the number of live births in 6,551 cycles in 2020 decreased by 4.1% compared with 6,829 cycles in 2019. The number of live births also increased from 8,585 in 2019, but the number dropped to 8,164 in 2020, a decrease of 421 births.



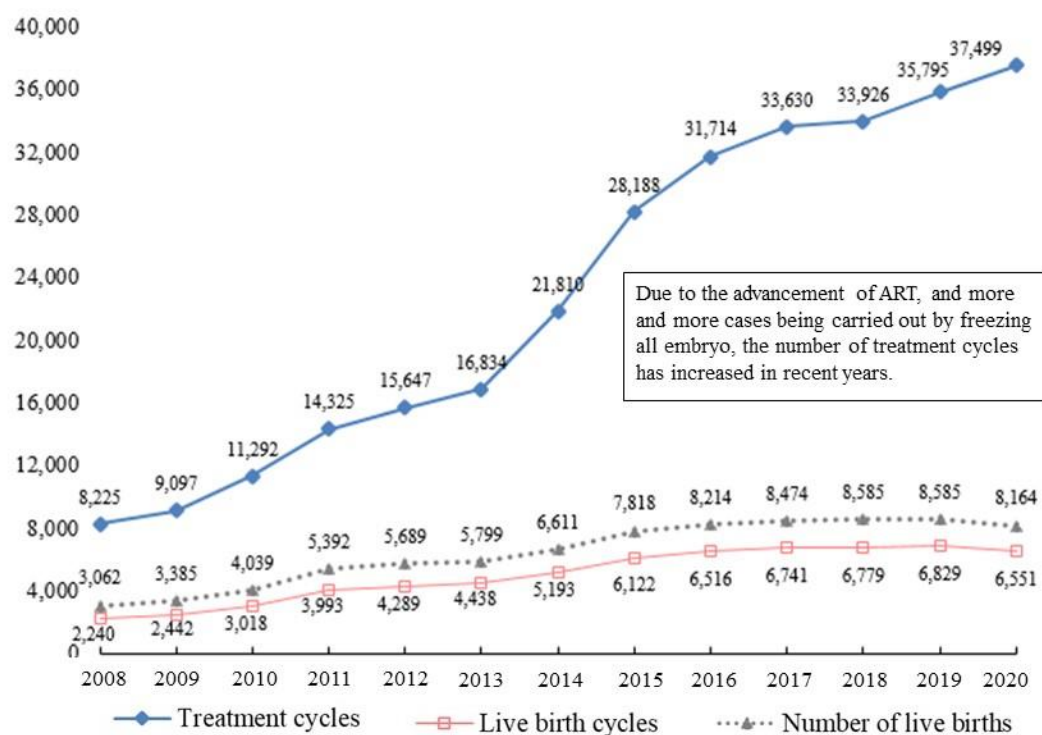
Table 12 The Number of ART Cycles, Live Birth Cycles, and Live Births from 1998 to 2020

Year	Treatment cycles (unit: cycle)	Live birth cycles (unit: cycle)	Number of live births (unit: infant)	Nationals of ROC ^{Note 2}		
				Number of treatment cycles (unit: cycle)	Live birth cycles (unit: cycle)	Number of live births (unit: infant)
1998	7,146	1,585	2,317			-
1999	6,966	1,586	2,271			-
2000	7,038	1,664	2,358			-
2001	6,458	1,645	2,381			-
2002	6,622	1,722	2,465			-
2003	5,831	1,580	2,270			-
2004	6,792	1,849	2,598			-
2005	7,346	2,035	2,839			-
2006	7,281	2,022	2,793			-
2007	7,941	2,139	2,926			-
2008	8,354	2,265	3,093	8,225	2,240	3,062
2009	9,266	2,495	3,464	9,097	2,442	3,385
2010	11,513	3,068	4,117	11,292	3,018	4,039
2011	14,645	4,060	5,486	14,325	3,993	5,392
2012	16,041	4,394	5,825	15,647	4,289	5,689
2013	17,393	4,585	5,988	16,834	4,438	5,799
2014	22,684	5,387	6,857	21,810	5,193	6,611
2015	29,720	6,454	8,254	28,188	6,122	7,818
2016	34,486	7,132	8,988	31,714	6,516	8,214
2017	37,849	7,654	9,590	33,630	6,741	8,474
2018	39,840	8,113	10,236	33,926	6,779	8,585
2019	44,256	8,583	10,678	35,795	6,829	8,585
2020	38,289	7,188	8,944	37,499	6,551	8,164
Total	393,757	89,205	116,738			-

Note:

1. The number of live births is based on the patients' treatment year but not their actual year of birth.
2. If one of the couples receiving ART is the national of ROC, he or she will be included in the analysis, which excluding those who are both foreign nationals.

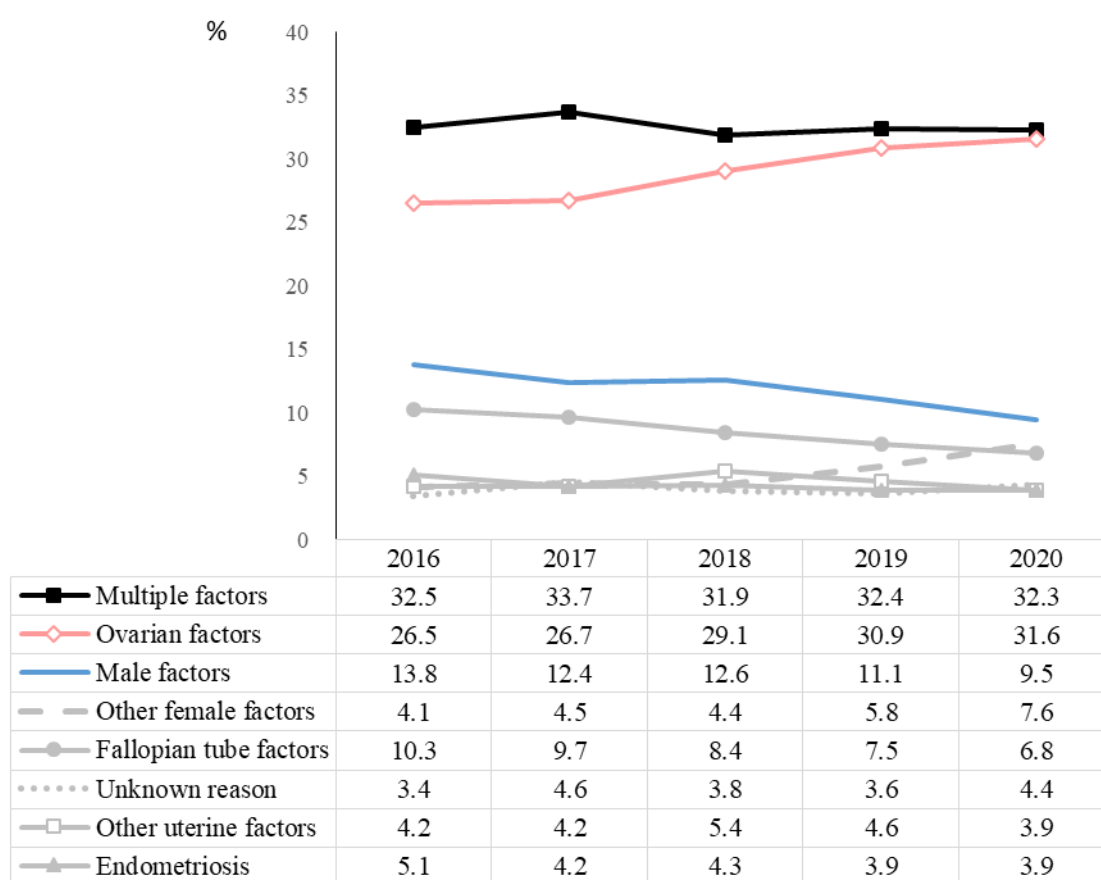
Figure 22 The Number of ART Cycles, Live Birth Cycles and Live Births from 2008 to 2020



3. Causes of Infertility in ART recipients in nationals of ROC

The Regulations for Assisted Reproduction Information Notification and Administration was amended in 2015, with the addition of ovarian factors, endometriosis and other uterine factors as the causes of infertility the number of which was raised from 5 to 8. In the past 5 years, the top 3 causes of infertility are ovarian factors, multiple factors and male factors; and in 2020, multiple factors ranked as the highest cause of infertility (Figure 23).

Figure 23 Causes of Infertility in ART recipients who are the nationals of ROC from 2016 to 2020



4.

4. Pregnancy rate and live birth rate of nationals of ROC under ART

Figure 24 shows the pregnancy rate and live birth rate of ART from 2008 to 2020, where the pregnancy rate reached the highest (37.5% and 27.9%) in 2011. Then the pregnancy rate and live birth rate started to decline, with 25.2% and 17.5%, respectively in 2020. Because more and more cases were carried out by freezing all embryos in recent years, the number of treatment cycles has increased. However, embryo transfer was not performed in those freeze-all cycles; therefore, and only the cumulative pregnancy rate and the cumulative live birth rate can truly express the quality of ART.

The cumulative pregnancy rate increased from 41.3% in 2008 to 45.4% in 2020; the cumulative live birth rate increased from 30.8% in 2008 to 31.5% in 2020 (Figure 25).

Figure 24 Pregnancy Rate and Live Birth Rate of ART in nationals of ROC from 2008 to 2020

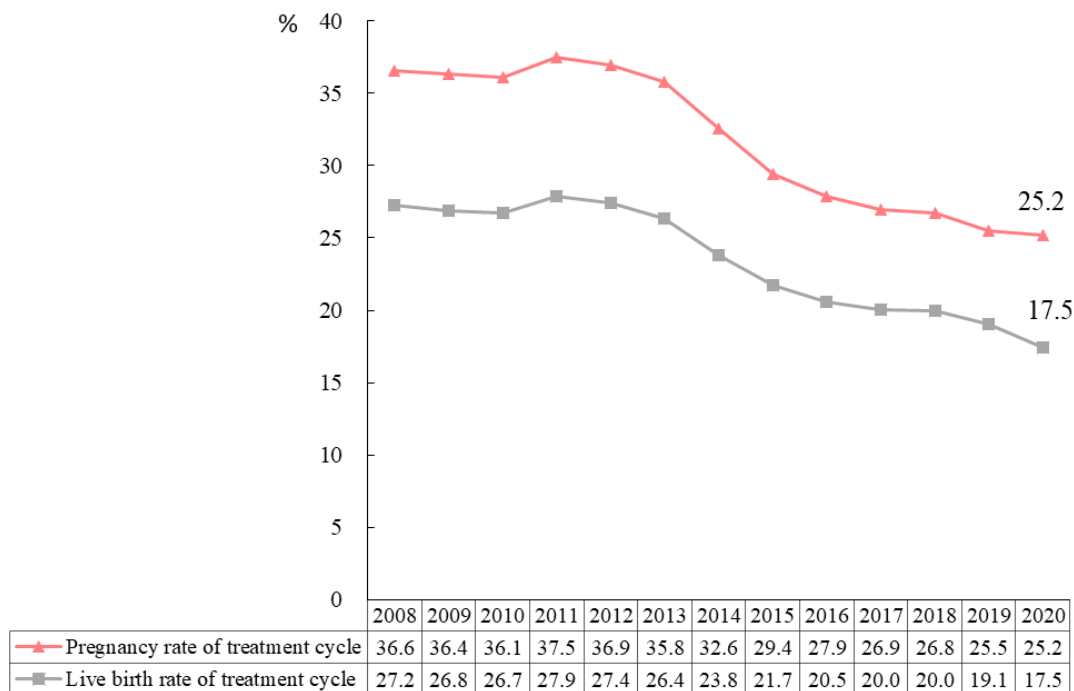
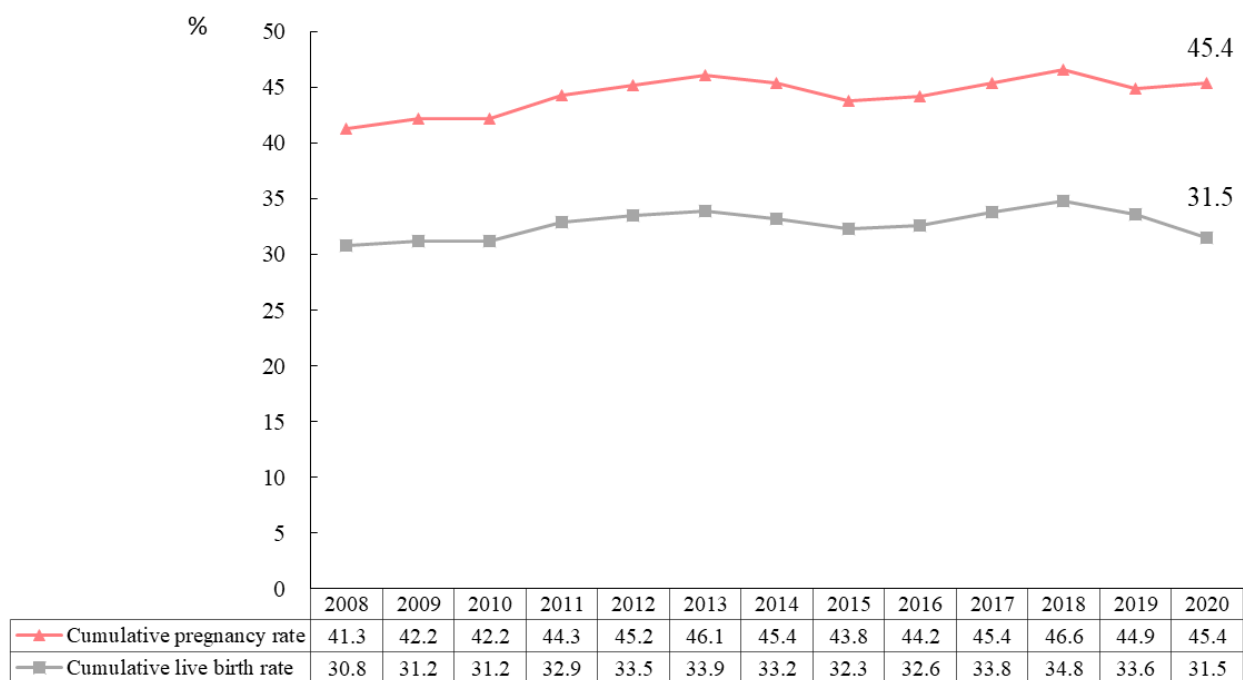


Figure 25 Cumulative Pregnancy Rate and Cumulative Live Birth Rate of the ART Cycles in nationals of ROC from 2008 to 2020



Section 2 Trends in Success Rates of Transfer Cycles in nationals of ROC

The pregnancy rate and live birth rate of fresh embryo transfer cycles decreased from 40.0% and 29.9% in 2008 to 39.2% and 27.5% in 2020, respectively. Pregnancy and live birth rates with implanted frozen embryos rose to 50.0% and 37.6% in 2020. After 2009, the pregnancy and live birth rates of frozen embryo transfer cycles were always higher than those of fresh embryo transfer cycles (Figure 26 and Figure 27).

Figure 26 Pregnancy Rate of Transfer Cycles Using Fresh and Frozen Embryos in nationals of ROC from 2008 to 2020

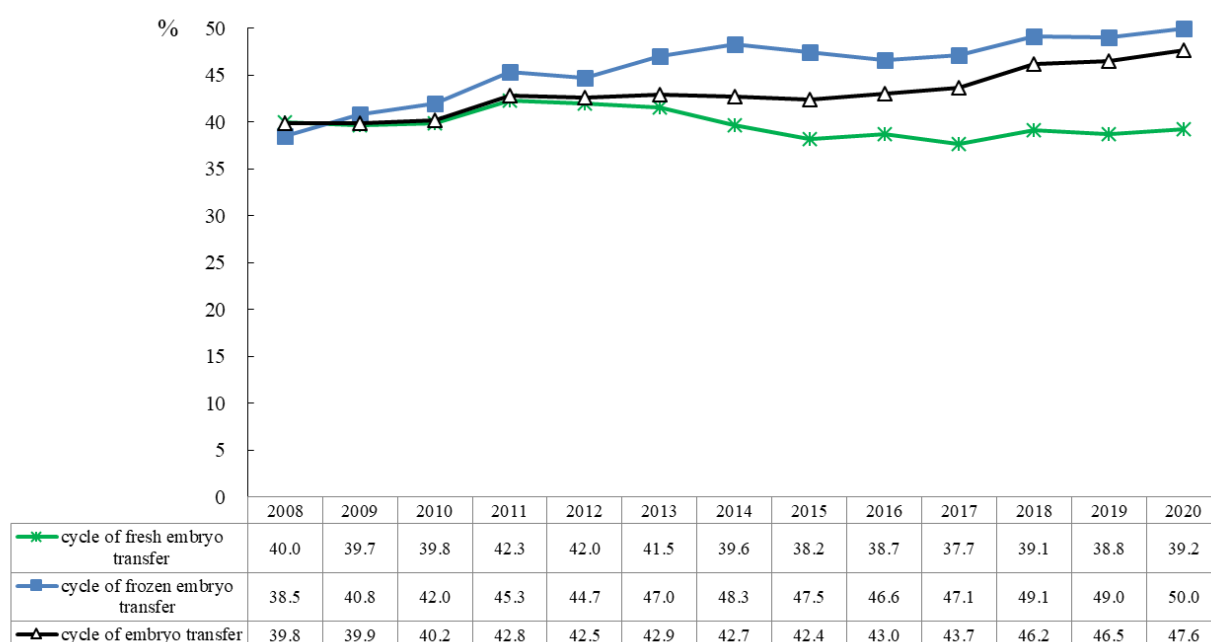
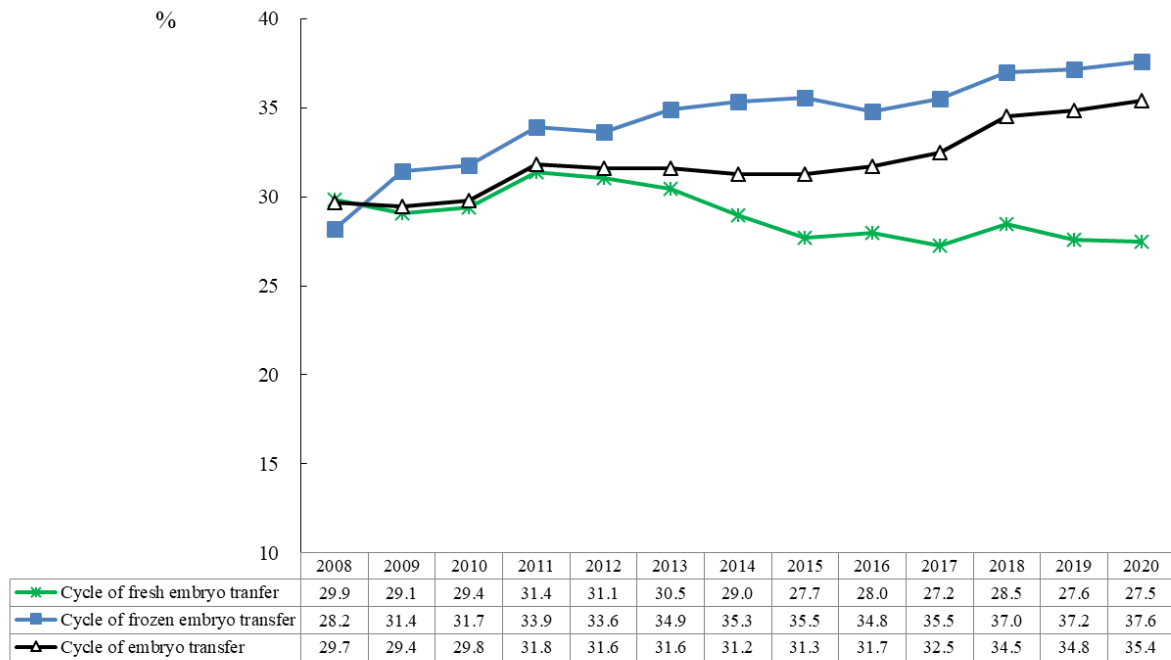
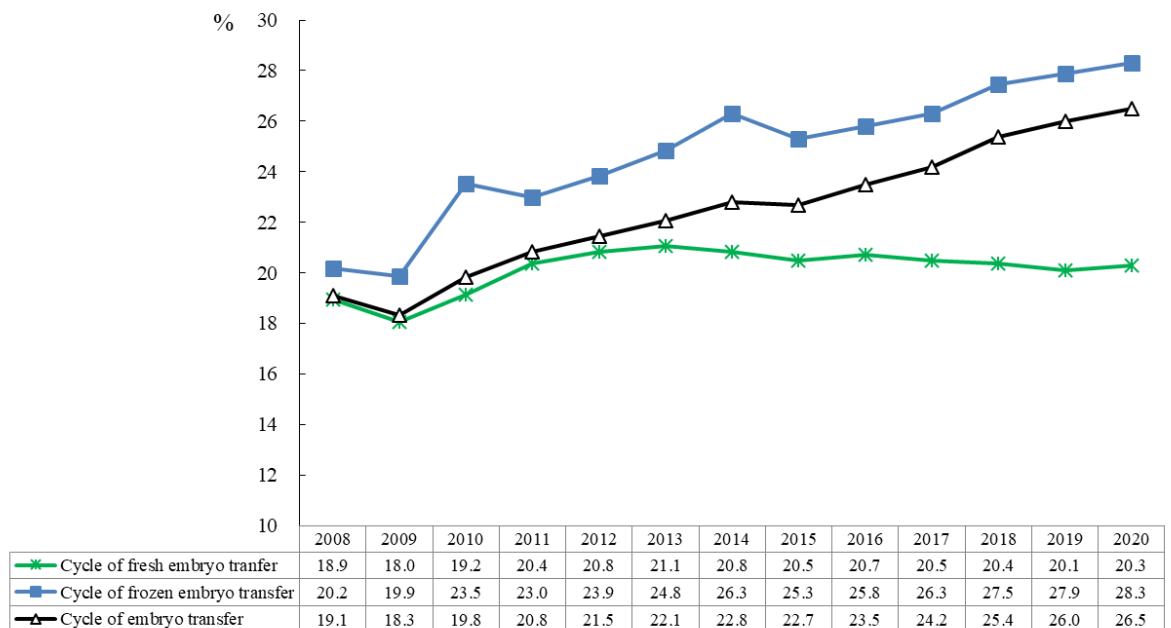


Figure 27 Live Birth Rate of Transfer Cycles Using Fresh and Frozen Embryos in nationals of ROC from 2008 to 2020



The singleton live birth rate of fresh embryo transfer cycles has increased from 18.0% in 2009 to 20.3% in 2020. The singleton live birth rate of frozen embryo transfer cycle increased significantly to 19.9% in 2009 and 28.3% in 2020. After 2008, the singleton live birth rate of frozen embryo transfer cycles was always higher than that of fresh embryo transfer cycles (Figure 28).

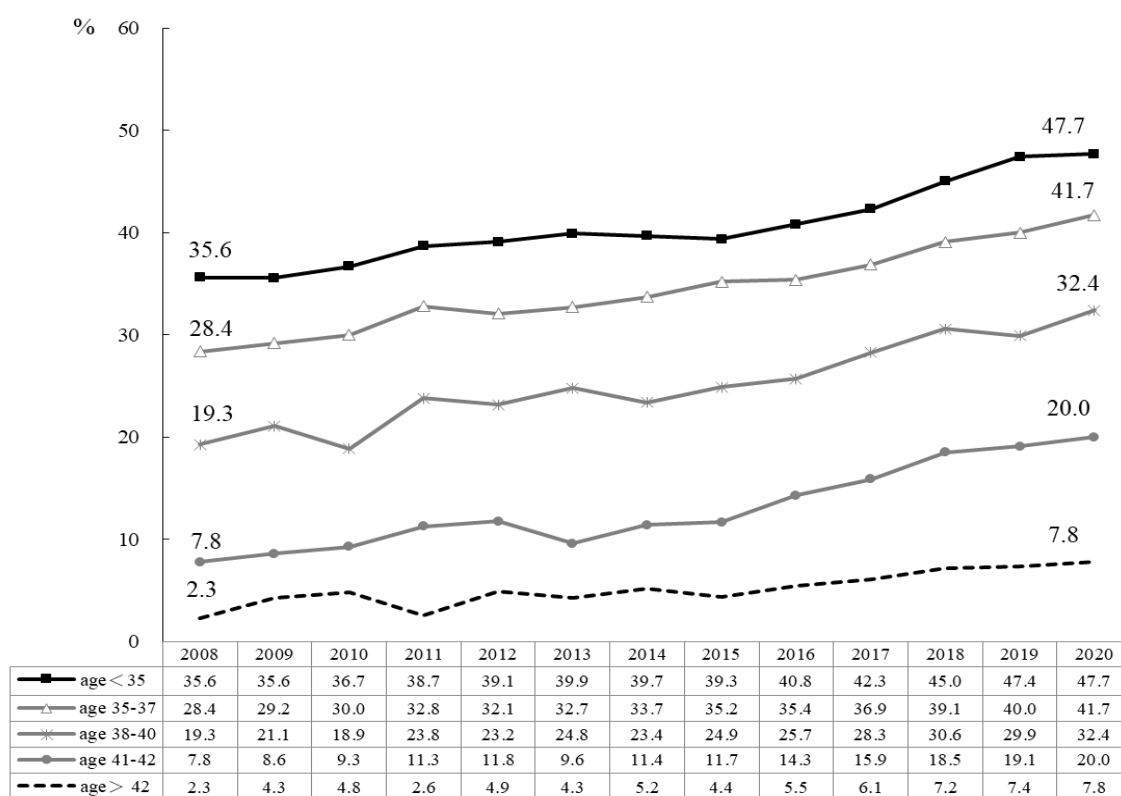
Figure 28 Singleton Live Birth Rate of Transfer Cycles Using Fresh and Frozen Embryos in nationals of ROC from 2008 to 2020



Section 3 Trends in Success Rates of Transfer Cycles by Age-Specific Groups in nationals of ROC

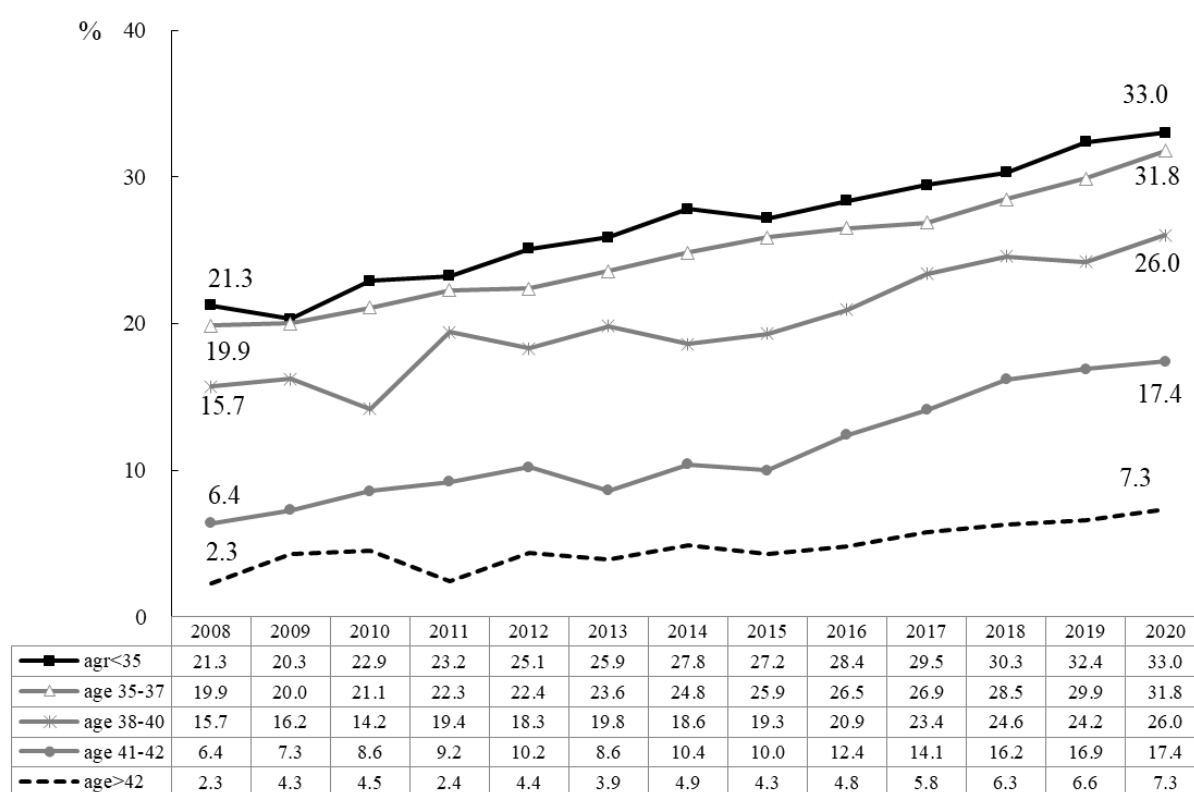
As the live birth rate of transfer cycles using donated eggs tends to be affected by the age of the donors, only the live birth rate of transfer cycles using nondonor gametes was analyzed. The live birth rate of women under the age of 35 increased from 35.6% in 2008 to 47.7% in 2020. In the same period, this rate increased by 13.3 percentage points in the 35 to 37 years age group, 13.1 percentage points in the 38 to 40 years age group, 12.2 percentage points in the 41 to 42 years age group, and 5.5 percentage points in women older than 42 years (Figure 29).

Figure 29 Live Birth Rate of Transfer Cycles Using Nondonor Gametes in nationals of ROC from 2008 to 2020 (For Age-Specific Women Undergoing ART)



The singleton live birth rate of transfer cycles of women under age of 35 increased from 21.3% in 2008 to 33.0% in 2020. In the same period, this rate increased by 11.9 percentage points in the 35 to 37 years age group, 10.3 percentage points in the 38 to 40 years age group, and 11 percentage points in the 41 to 42 years age group. The singleton live birth rate in women older than 42 years increased by 5 percentage points (Figure 30).

Figure 30 Singleton Live Birth Rate of transfer Cycles in nationals of ROC Using Nondonor Gametes from 2008 to 2020 (For Age-Specific Women Undergoing ART)

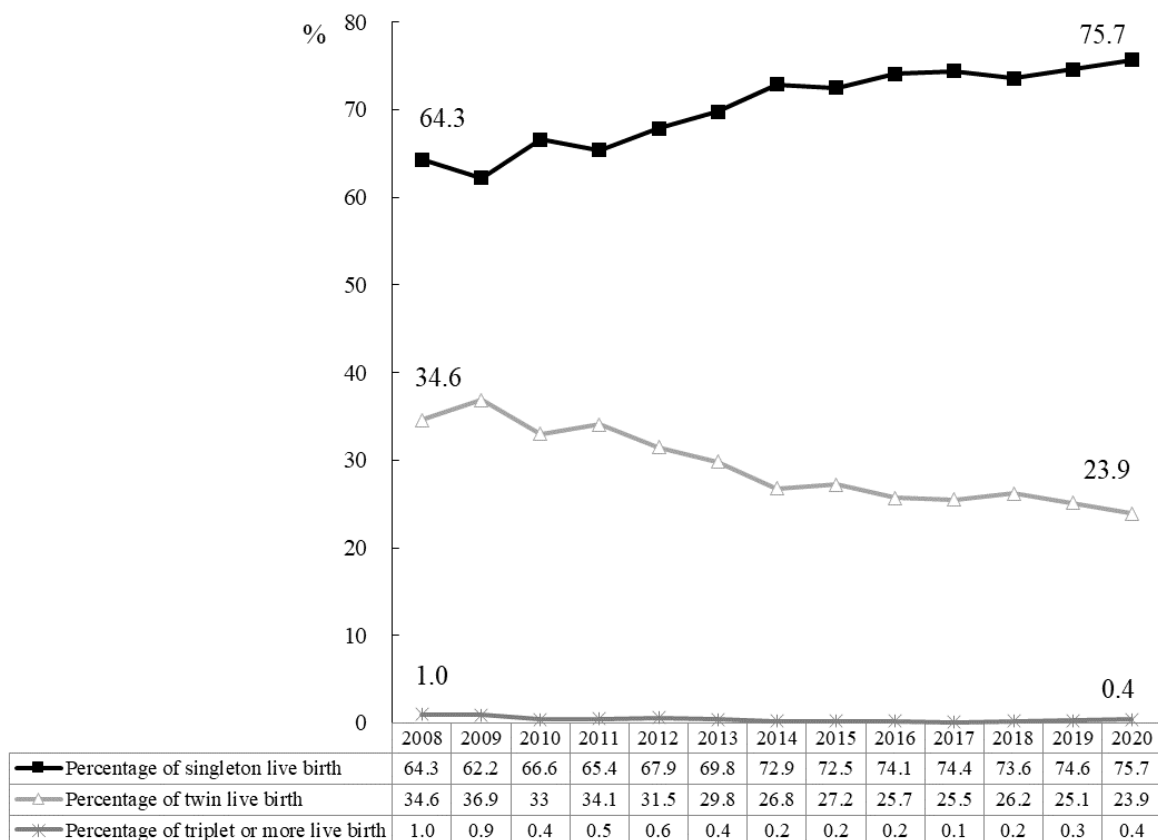


Section 4 Number of Fetuses in Live Birth Cycles, Birth Weights, and Weeks of Gestation in nationals of ROC

Singleton Live birth percentage is an important indicator in measuring the success rate because singleton live birth has lower risks than multiple birth, including preterm birth, low birth weight, congenital defects, and mortality etc. In order to effectively support ART institutions to reduce the percentage of multiple births, the HPA has included “The ratio of women under the age of 35 who have had less than two embryos transferred within current permit period” as one of the indicator for permit evaluation of ART institutions.

The singleton live birth rate percentage has increased from 64.3% in 2008 to 75.7% in 2020; while the live birth rate percentage of twins and that of triplets and more has decreased from 34.6% and 1.0% in 2008 to 23.9% and 0.4% in 2020, respectively (Figure 31).

Figure 31 Percentage of live birth cycles in nationals of ROC from 2008 to 2020



Among the live births from ART, birth weight less than 1,500 gm accounted for 5.6% of the total live births in 2008, and this figure decreased to 3.9% in 2020; similarly, birth weight between 1,500 to 2,499 gm also decreased from 37.3% in 2008 to 29.7% in 2020. However, live birth weight of 2,500 gm and above increased from 57.1% in 2008 to 66.4% in 2020 (Figure 32). In addition, live births with gestational age of less than 37 weeks accounted for 44.4% in 2008, and this figure decreased to 35.2% in 2020; whereas, live births with gestational age between 37 to 41 weeks increased from 55.6% in 2008 to 64.7% in 2020, and live births with gestational age of 42 weeks and above decreased from 0.03% in 2008 to 0.06% in 2020 (Figure 33).

Figure 32 Birth Weight of Live Birth Cycles in nationals of ROC from 2008 to 2020

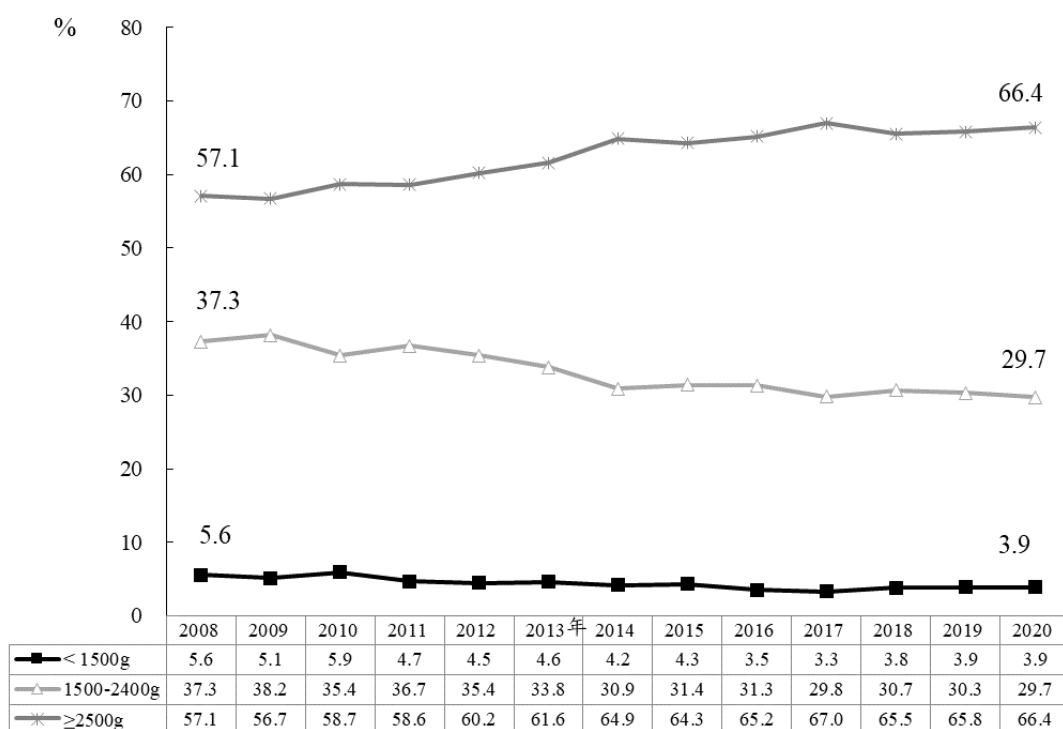
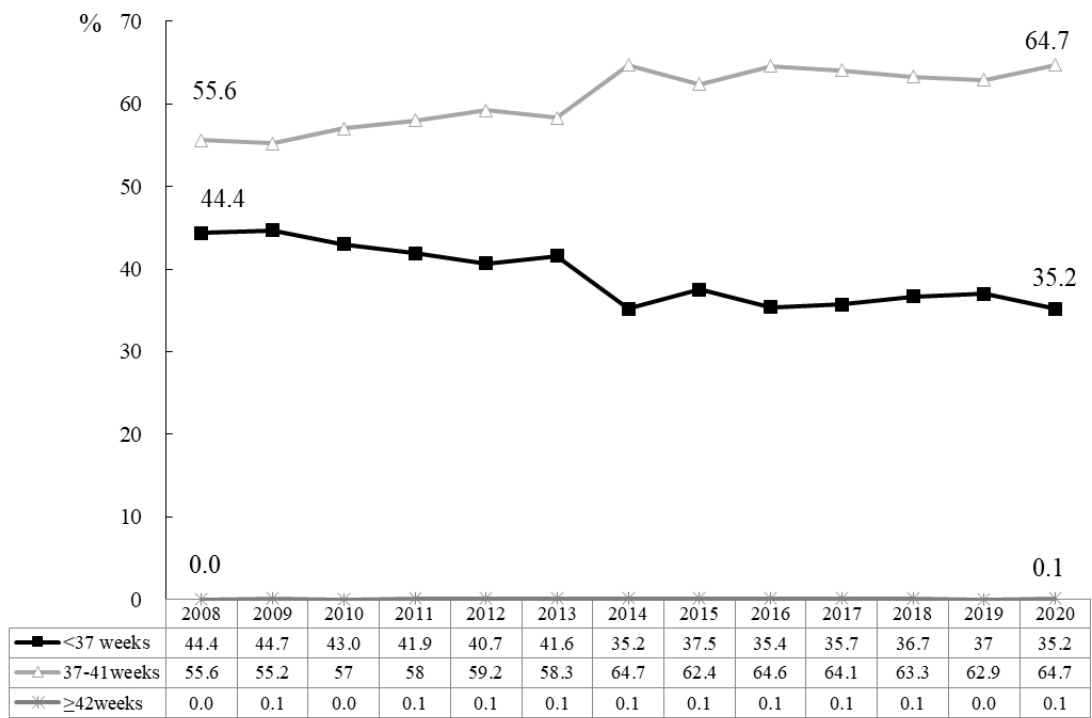


Figure 33 Gestational Weeks of Live Birth Cycles in nationals of ROC from 2008 to 2020



Appendix 1 Summary of Assisted Reproduction Statistics in 2020

Profile

Assisted Reproduction Method		Procedural Factors		Causes of Infertility (%)	
IVF/ET	99.9%	Use ICSI	39%	Fallopian tube factor	7%
ZIFT/ TET< 1%				Ovarian factor	32%
AID	<1%			Endometriosis	4%
				Other uterine factors	4%
				Other female factors	8%
				Male factor	10%
				Multiple factors	31%
				Unknown reason	3%

Pregnancy success rates

Type of Cycle	Women age				
	<35	35-37	38-40	>40	Total
Fresh embryo of ART Cycles					
Number of treatment cycles	4,685	4,379	5,485	7,288	21,837
Percentage of pregnancy cycles	10.9	10.2	8.9	3.5	7.8
Percentage of live birth cycles	9.0	7.6	5.9	1.6	5.5
Number of Transfer Cycles	1,019	959	1,176	1,193	4,347
Pregnancy rate of transfer cycles	50.2	46.7	41.3	21.3	39.1
Live birth rate of transfer cycles	41.4	34.7	27.6	9.6	27.4
Singleton live birth rate of transfer cycles	30.2	25.8	21.1	8.2	20.7
Percentage of cancellations	79.5	79.3	80.0	85.0	81.4
Average number of embryos transferred	2.1	2.4	2.6	2.7	2.5
Percentage of multiple births in live birth cycles	27.0	25.8	23.5	14.0	24.5

Frozen embryo of ART

Cycles	<35	35-37	38-40	>40	Total
Number of treatment cycles	4,506	4,142	3,799	4,005	16,452
Percentage of pregnancy cycles	58.5	53.8	47.2	32.5	48.4
Percentage of live birth cycles	48.3	42.2	33.2	20.1	36.4
Number of Transfer Cycles	4,389	4,016	3,671	3,805	15,881
Pregnancy rate of transfer cycles	60.1	55.5	48.9	34.2	50.1
Live birth rate of transfer cycles	49.6	43.5	34.4	21.2	37.7
Singleton live birth rate of transfer cycles	34.1	33.3	28.0	18.1	28.7
Percentage of cancellations	2.6	3.0	3.4	5.0	3.5
Average number of embryos transferred	1.9	2.1	2.2	2.4	2.1
Percentage of multiple births in live birth cycles	31.3	23.4	18.6	14.5	24.1

Fresh embryos from nondonor eggs

	<35	35-37	38-40	>40	Total
Number of treatment cycles	4,631	4,339	5,413	6,839	21,222
Percentage of pregnancy cycles	10.9	10.2	8.8	3.1	7.7
Percentage of live birth cycles	9.0	7.6	5.8	1.2	5.4
Number of Transfer Cycles	1,013	953	1,162	1,126	4,254
Pregnancy rate of transfer cycles	50.0	46.6	41.0	19.0	38.6
Live birth rate of transfer cycles	41.1	34.5	27.1	7.4	26.9
Singleton live birth rate of transfer cycles	29.8	25.6	20.8	6.6	20.3
Percentage of cancellations	79.3	79.1	79.8	84.6	81.1
Average number of embryos transferred	2.1	2.4	2.7	2.7	2.5
Percentage of multiple births in live birth cycles	27.4	25.8	23.2	10.8	24.6

Frozen embryos from nondonor eggs

	<35	35-37	38-40	>40	Total
Number of treatment cycles	4,451	4,072	3,707	3,238	15,468
Percentage of pregnancy cycles	58.4	53.8	47.1	28.4	48.2
Percentage of live birth cycles	48.2	42.2	33.1	16.1	36.3
Number of Transfer Cycles	4,337	3,946	3,588	3,069	14,940
Pregnancy rate of transfer cycles	59.9	55.5	48.7	30.0	49.9
Live birth rate of transfer cycles	49.5	43.6	34.2	17.0	37.6
Singleton live birth rate of transfer cycles	33.9	33.4	27.9	15.1	28.5
Percentage of cancellations	2.6	3.1	3.2	5.2	3.5
Average number of embryos transferred	1.9	2.1	2.3	2.5	2.2
Percentage of multiple births in live birth cycles	31.4	23.3	18.5	11.1	24.2

Fresh embryos from nondonor sperm

	<35	35-37	38-40	>40	Total
Number of treatment cycles	4,616	4,350	5,454	7,247	21,667
Percentage of pregnancy cycles	10.9	10.2	8.9	3.5	7.8
Percentage of live birth cycles	9.0	7.6	5.9	1.6	5.5
Number of Transfer Cycles	1,003	949	1,173	1,186	4,311
Pregnancy rate of transfer cycles	50.2	46.8	41.3	21.3	39.1
Live birth rate of transfer cycles	41.4	34.8	27.5	9.5	27.4
Singleton live birth rate of transfer cycles	30.2	25.8	21.1	8.2	20.7
Percentage of cancellations	79.4	79.3	79.9	85.0	81.4
Average number of embryos transferred	2.1	2.4	2.6	2.7	2.5
Percentage of multiple births in live birth cycles	27.0	25.8	23.2	14.2	24.4

Appendix 1 Summary of Assisted Reproduction Statistics in 2020

Frozen embryos from nondonor sperm

	<35	35-37	38-40	>40	Total
Number of treatment cycles	4,429	4,106	3,761	3,975	16,271
Percentage of pregnancy cycles	58.4	53.8	47.2	32.5	48.3
Percentage of live birth cycles	48.2	42.2	33.0	20.2	36.3
Number of Transfer Cycles	4,316	3,984	3,635	3,778	15,713
Pregnancy rate of transfer cycles	59.9	55.4	48.8	34.2	50.0
Live birth rate of transfer cycles	49.4	43.4	34.2	21.2	37.6
Singleton live birth rate of transfer cycles	34.0	33.3	27.8	18.1	28.6
Percentage of cancellations	2.6	3.0	3.4	5.0	3.4
Average number of embryos transferred	1.9	2.1	2.3	2.4	2.2
Percentage of multiple births in live birth cycles	31.3	23.3	18.7	14.6	24.0

Fresh embryos from nondonor gametes

	<35	35-37	38-40	>40	Total
Number of treatment cycles	4,562	4,310	5,382	6,798	21,052
Percentage of pregnancy cycles	10.9	10.2	8.8	3.1	7.7
Percentage of live birth cycles	9.0	7.6	5.8	1.2	5.4
Number of Transfer Cycles	997	943	1,159	1,119	4,218
Pregnancy rate of transfer cycles	49.9	46.7	41.0	19.0	38.5
Live birth rate of transfer cycles	41.0	34.6	27.1	7.3	26.8
Singleton live birth rate of transfer cycles	29.8	25.7	20.9	6.5	20.2
Percentage of cancellations	79.2	79.2	79.7	84.6	81.1
Average number of embryos transferred	2.1	2.4	2.7	2.7	2.5
Percentage of multiple births in live birth cycles	27.4	25.8	22.9	11.0	24.5

Frozen embryos from nondonor gametes

	<35	35-37	38-40	>40	Total
Number of treatment cycles	4,374	4,036	3,669	3,208	15,287
Percentage of pregnancy cycles	58.3	53.8	47.0	28.4	48.1
Percentage of live birth cycles	48.1	42.2	33.0	16.1	36.2
Number of Transfer Cycles	4,264	3,914	3,552	3,042	14,772
Pregnancy rate of transfer cycles	59.8	55.4	48.6	29.9	49.8
Live birth rate of transfer cycles	49.3	43.5	34.0	17.0	37.4
Singleton live birth rate of transfer cycles	33.8	33.4	27.7	15.1	28.4
Percentage of cancellations	2.5	3.0	3.2	5.2	3.4
Average number of embryos transferred	1.9	2.1	2.3	2.5	2.2
Percentage of multiple births in live birth cycles	31.4	23.2	18.5	11.2	24.2

Total for all ages

Donor eggs	Fresh embryos	Frozen embryos
Number of Transfer Cycles	93	941
Live birth rate of transfer cycles	53.8	40.3

Appendix 1 Summary of Assisted Reproduction Statistics in 2020

Average number of embryos transferred	2.0	1.8
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Donor sperm

	Fresh embryos	Frozen embryos
Number of Transfer Cycles	36	168
Live birth rate of transfer cycles	33.3	50.0
Average number of embryos transferred	2.7	1.9

Embryos from nondonor gametes

	Fresh embryos	Frozen embryos
Number of Transfer Cycles	4,218	14,772
Live birth rate of transfer cycles	26.8	37.4
Average number of embryos transferred	2.5	2.2

Number of embryos transferred and singleton live birth percentage

<35 age group

	Number of transferred embryos			
	1	2	3	4
Number of Transfer Cycles	1,209	3,383	649	166
Pregnancy rate of transfer cycle	54	61	54	55
Singleton with fetal heart sound in all pregnancies	94	61	58	57
Singleton percentage in all live birth	99	62	58	61

35-37 age group

	Number of transferred embryos			
	1	2	3	4
Number of Transfer Cycles	1,134	2,495	941	405
Pregnancy rate of transfer cycle	51	56	52	52
Singleton with fetal heart sound in all pregnancies	96	67	60	59
Singleton percentage in all live birth	99	71	69	64

38-40 age group

	Number of transferred embryos			
	1	2	3	4
Number of Transfer Cycles	1,012	1,912	1,164	759
Pregnancy rate of transfer cycle	45	48	47	47
Singleton with fetal heart sound in all pregnancies	93	64	63	57
Singleton percentage in all live birth	99	77	75	69

Appendix 1 Summary of Assisted Reproduction Statistics in 2020

>40 age group

	Number of transferred embryos			
	1	2	3	4
Number of Transfer Cycles	1,120	1,615	1,121	1,142
Pregnancy rate of transfer cycle	35	33	29	27
Singleton with fetal heart sound in all pregnancies	88	64	61	60
Singleton percentage in all live birth	100	75	85	86

Number of reporting ART institutions: 93

Appendix 2 Statistical Data on Individual ART Institutions in 2020

County/City	Name of Institution	Treatment Cycles	Assisted Reproduction Methods (%)			Causes of Infertility (%)				
			IVF	ICSI (IVF+ICSI)	Other	Fallopian tube factor	Other female factors	Male factor	Multiple factors	Unknown reason
Keelung City	Jian-An Fertility Center	327	72.8	27.2	0.0	10.7	46.2	11.3	22.9	8.9
Taipei City	National Taiwan University Hospital	1216	62.3	37.7	0.0	5.5	30.3	7.4	51.8	5.0
	Taipei Chang Gung Memorial Hospital, Chang Gung Medical Foundation	340	15.9	84.1	0.0	0.0	7.6	0.0	92.4	0.0
	Taipei Veterans General Hospital	480	79.0	21.0	0.0	7.9	39.6	42.3	5.6	4.6
	Tri-Service General Hospital	194	58.8	41.2	0.0	6.2	29.9	7.2	54.6	2.1
	MacKay Memorial Hospital	596	64.8	35.2	0.0	5.4	21.8	29.5	29.5	13.8
	Cathy General Hospital	270	89.6	10.4	0.0	11.9	61.5	8.5	18.1	0.0
	Chung Shan Hospital	367	29.4	18.3	52.3	9.8	50.7	14.4	20.2	4.9
	Shin Kong Wu Ho-Su Memorial Hospital	222	43.7	56.3	0.0	21.6	41.0	20.3	10.8	6.3
	Taiwan Adventist Hospital	235	75.7	24.3	0.0	0.0	71.1	12.3	16.6	0.0
	Taipei Medical University Hospital	1421	70.7	29.3	0.0	8.9	71.6	12.3	4.2	3.0
	Pan's Ladies Clinic & Infertility Center	93	73.1	26.9	0.0	10.8	47.2	17.2	2.2	22.6
	Honji Fertility Center	103	25.2	74.8	0.0	1.9	34.0	20.4	32.0	11.7
	Hope Fertility & PGD Center	310	60.0	40.0	0.0	0.6	59.4	4.8	32.3	2.9
	IHMED Reproductive Med Center	1170	33.2	31.5	35.3	7.4	60.5	6.8	24.0	1.3
	Huang, Jian-Rong Obstetrics and Gynecology Clinic	868	29.3	70.7	0.0	8.9	31.7	13.5	29.0	16.9
	Dr. Wang Reproductive Fertility Center	1550	58.0	42.0	0.0	5.3	17.3	8.7	68.7	0.0
	Taipei Branch of Gene Infertility Medical Center	222	86.5	12.2	1.4	2.3	64.8	9.0	22.1	1.8
	Renai Branch of Taipei City Hospitals	164	24.4	42.1	33.5	4.6	67.6	4.9	19.5	3.7
	HuaYu Fertility Center	424	60.4	31.4	8.3	9.9	55.4	5.4	5.0	24.3
	Stork 11 Fertility Center Taipei	847	56.0	44.0	0.0	0.0	96.6	3.4	0.0	0.0

Appendix 2 Statistical Data on Individual ART Institutions in 2020

County/City	Name of Institution	Treatment Cycles	Assisted Reproduction Methods (%)			Causes of Infertility (%)				
			IVF	ICSI (IVF+ICSI)	Other	Fallopian tube factor	Other female factors	Male factor	Multiple factors	Unknown reason
Taipei City	Usoon Fertility Center	1768	73.3	26.7	0.0	12.4	60.5	9.0	3.6	14.5
	Taipei Fertility Center	1436	53.6	46.4	0.0	7.8	67.6	5.1	14.4	5.1
	Becoming Reproductive Center	253	83.8	16.2	0.0	2.0	15.4	3.6	77.4	1.6
New Taipei City	Far Eastern Memorial Hospital	235	40.4	59.6	0.0	5.1	33.2	6.0	52.7	3.0
	Art Baby	143	74.8	25.2	0.0	3.5	63.6	10.5	16.1	6.3
	Taipei Medical University-Shuang Ho Hospital, Ministry of Health and Welfare	27	51.9	33.3	14.8	0.0	44.5	0.0	22.2	33.3
	Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation	72	47.2	52.8	0.0	11.1	51.4	13.9	13.9	9.7
	Star International Fertility Center	95	46.3	53.7	0.0	5.3	71.5	2.1	21.1	0.0
	Banqiao Branch of Gene Infertility Medical Center	208	55.8	44.2	0.0	1.0	54.8	16.8	21.6	5.8
Taoyuan City	Linkou Chang Gung Memorial Hospital, Chang Gung Medical Foundation	1412	47.0	52.9	0.1	3.3	40.2	2.3	53.9	0.3
	Tao Yuan General Hospital, Ministry of Health and Welfare	109	41.3	20.2	38.5	11.0	59.7	10.2	18.3	0.9
	Min-Sheng General Hospital	117	63.2	36.8	0.0	15.4	46.2	17.1	8.5	12.8
	Hungchi Women & Children's Hospital	687	46.1	53.9	0.0	18.0	44.6	11.2	26.2	0.0
	Hueish Sheng Obstetrics Clinic	131	90.8	9.2	0.0	17.6	39.7	9.9	16.8	16.0
	FM IVF Center	13	23.1	76.9	0.0	7.7	23.1	23.1	0.0	46.1
Hsinchu City	Jiang's OBS & GYN Clinic	37	40.5	59.5	0.0	5.4	46.0	45.9	0.0	2.7
	Stork Fertility Center	1566	65.5	34.5	0.0	0.4	95.6	3.9	0.0	0.1
	Hsinchu MacKay Memorial Hospital	323	48.3	51.7	0.0	4.6	11.5	26.0	56.4	1.5
	Cheng-Kai Lin Babymake Clinic	288	73.6	26.4	0.0	1.0	29.9	7.6	61.5	0.0
Hsinchu County	Taiwan IVF Group	1084	59.5	40.4	0.1	1.6	23.3	8.7	64.3	2.1
	China Medical University Hsinchu Hospital	141	57.4	42.6	0.0	8.5	55.3	27.0	8.5	0.7
Miaoli County	Da-Chien Health Medical System	35	85.7	14.3	0.0	34.3	51.3	8.6	2.9	2.9
Taichung City	China Medical University Hospital	235	46.4	53.6	0.0	8.1	32.3	18.7	26.4	14.5
	Chung Shan Medical University Hospital	171	58.5	41.5	0.0	0.6	1.2	2.9	94.7	0.6
	Lee Women's Hospital	4625	53.8	46.2	0.0	2.8	21.8	3.2	72.2	0.0

Appendix 2 Statistical Data on Individual ART Institutions in 2020

County/City	Name of Institution	Treatment Cycles	Assisted Reproduction Methods (%)			Causes of Infertility (%)				
			IVF	ICSI (IVF+ICSI)	Other	Fallopian tube factor	Other female factors	Male factor	Multiple factors	Unknown reason
Taichung City	Taichung Veterans General Hospital	776	84.5	15.2	0.3	11.5	54.9	12.5	18.8	2.3
	Cheng Ching Hospital Chung Kang Branch	63	77.8	22.2	0.0	41.3	53.9	4.8	0.0	0.0
	Lin Shin Hospital	110	52.7	47.3	0.0	30.9	33.7	10.0	23.6	1.8
	Liu, Zhong-Jun Women and Children Clinic	207	43.5	56.5	0.0	9.7	35.6	15.0	21.3	18.4
	Mei Tsun Women and Children Clinic	43	72.1	27.9	0.0	7.0	60.5	11.6	9.3	11.6
	Hsieh, Yao-Yuan Women and Children's Clinic	22	13.6	86.4	0.0	0.0	81.8	18.2	0.0	0.0
	Dashin Women and Children's Clinic	440	28.6	26.4	45.0	6.6	57.5	2.7	32.3	0.9
	Taichung Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation	31	90.3	9.7	0.0	25.8	25.8	6.5	25.8	16.1
	Chang's Fertility Center	448	68.5	31.5	0.0	6.9	17.6	9.4	39.8	26.3
	LOVEIVF Fertility Center	9	55.6	44.4	0.0	11.1	55.6	11.1	22.2	0.0
	Tungs' Taichung MetroHarbor Hospital	23	43.5	56.5	0.0	34.8	39.1	17.4	8.7	0.0
Changhua County	Changhua Christian Hospital	925	66.9	33.0	0.1	6.7	56.1	9.3	22.9	5.0
	Han-Ming Hospital	2	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
	Dr. Tsai & Dr. Chen's Women Clinic	354	54.5	45.5	0.0	14.4	68.9	8.8	7.9	0.0
	Chang Bing Show Chwan Memorial Hospital	41	80.5	19.5	0.0	22.0	34.1	14.6	19.5	9.8
Yunlin county	National Taiwan University Hospital Yunlin Branch	111	58.6	41.4	0.0	15.3	37.0	9.9	26.1	11.7
Chiayi City	Ditmanson Medical Foundation Chia-Yi Christian Hospital	26	84.6	15.4	0.0	15.4	46.1	23.1	0.0	15.4
	Jie-An Mother & Children Clinic	178	38.8	61.2	0.0	8.4	69.1	20.2	0.6	1.7
Chiayi County	Chiayi Chang Gung Memorial Hospital, Chang Gung Medical Foundation	101	97.0	3.0	0.0	25.7	25.7	0.0	14.9	33.7
Tainan City	National Cheng Kung University Hospital	509	87.6	12.4	0.0	4.9	42.3	9.8	37.1	5.9
	Kuo General Hospital	111	75.7	24.3	0.0	4.5	51.4	4.5	24.3	15.3
	Tube Infertility Clinic, Taiwan IVF Center	158	67.1	32.9	0.0	3.8	48.0	14.6	32.3	1.3

Appendix 2 Statistical Data on Individual ART Institutions in 2020

County/City	Name of Institution	Treatment Cycles	Assisted Reproduction Methods (%)			Causes of Infertility (%)				
			IVF	ICSI (IVF+ICSI)	Other	Fallopian tube factor	Other female factors	Male factor	Multiple factors	Unknown reason
Tainan City	Sin-Lau Medical Foundation, the Presbyterian church in Taiwan	105	77.1	22.9	0.0	18.1	44.7	4.8	32.4	0.0
	An-An Women and Children Clinic	934	89.0	10.3	0.7	9.9	69.8	14.0	6.3	0.0
	DA-AN Women and Children Hospital	51	54.9	45.1	0.0	11.8	45.1	27.5	7.8	7.8
	Chi Mei Medical Center	633	60.5	39.5	0.0	1.3	10.6	27.0	61.1	0.0
	Jin -Sin Women and Children's Hospital	590	67.8	32.2	0.0	15.1	38.2	29.5	5.3	11.9
Kaohsiung City	Kaohsiung Medical University Chung-Ho Memorial Hospital	325	56.3	43.7	0.0	10.2	53.2	11.4	20.0	5.2
	Chien Shin Hospital	917	7.2	92.8	0.0	5.3	70.1	14.8	9.8	0.0
	Yuan's General Hospital	90	82.2	17.8	0.0	17.8	73.3	3.3	0.0	5.6
	Kaohsiung Veterans General Hospital	682	52.6	47.2	0.1	9.1	46.2	7.6	25.8	11.3
	Jung-Chou Chang Women and Children Clinic	22	54.5	45.5	0.0	27.3	63.6	0.0	9.1	0.0
	Kuo Hong-Chang GYN & IVF Clinic	141	90.1	9.9	0.0	4.3	79.4	7.8	8.5	0.0
	Makebaby Reproductive Center	669	26.8	73.2	0.0	10.9	62.6	11.1	13.0	2.4
	E-Da Dachang Hospital, E-Da Healthcare Group	146	69.2	30.8	0.0	0.7	83.5	15.8	0.0	0.0
	Kaohsiung Chang Gung Memorial Hospital, Chang Gung Medical Foundation	623	88.3	11.7	0.0	9.0	49.3	6.6	25.8	9.3
	Tung Chiao Eye Center	222	81.5	18.5	0.0	7.7	55.3	6.8	27.9	2.3
	E-Da Hospital, E-Da Healthcare Group	85	62.4	37.6	0.0	2.4	34.1	7.1	56.4	0.0
	Professor Chang Fertility Clinic	480	67.3	32.7	0.0	0.0	59.4	0.0	40.4	0.2
	Jung-An Maternal & Pediatric Hospital	7	100.0	0.0	0.0	57.1	14.3	0.0	14.3	14.3
Pingtung County	Pingtung Christian Hospital	17	100.0	0.0	0.0	11.8	29.4	0.0	58.8	0.0
Hualien County	Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation	40	52.5	15.0	32.5	2.5	52.5	17.5	22.5	5.0
Kinmen County	Kinmen Hospital, Ministry of Health and Welfare	70	51.4	48.6	0.0	2.9	91.4	5.7	0.0	0.0

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