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Comparison of the Birth Statistics between Multi-cultural and Korean Families in Korea (2015)

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Since 2002, the number of marriages, births, and family members among multi-cultural families (MCFs) has increased. Beginning in 2006, the government initiated a planned management for such families and has implemented the MCF policy basic plan since 2010. In 2015, with multiple socio-economic and medical support initiatives for MCF being available, we analyzed the statistics for several factors related to birth, to determine whether there are significant adverse birth outcomes in MCF. We analyzed the birth data of MCFs in 2015, from Statistics Korea. This study compared the birth data of MCF and Korean families (KF) by geography, neonatal birth weight (BW), gestational age (GA), birth order of the neonates, place of delivery, cohabitation period of parents before the first child, and parental education level. The distribution of BW and the prevalence of low BW (< 2,500 g) or very low BW (< 1,500 g) were similar between both groups. The incidence of preterm birth was lower in the MCF group (6.5% vs. 7.0%, $P = 0.015$) than in the KF group. In the MCF group, parental education level was lower, and incidence of out-of-hospital births was higher than that of the KF group. Adverse birth outcomes, such as preterm birth and low BW in MCF are similar or better than KF. This study could be a good basis to present the status of MCF birth and newborn care in 2015.

Keywords: Korea; Multi-cultural Society; Birth Outcomes; Birth Weight; Gestational Age; Health Disparities

INTRODUCTION

According to the Korean 'Multicultural Family Support Act' 2012, the definitions of multi-cultural family (MCF) are: 1) marriage-based immigrants under the Basic Act on the Treatment of Foreigners, 2) men acquiring Korean nationality after marriage according to the Nationality Act, and 3) all members getting Korean nationality for other reasons. Marriage-based immigrants are persons acquiring naturalization as members of MCF, according to the Basic Act on the Treatment of Foreigners in Korea or the Nationality Act (1). Based on these definitions, the number of MCF individuals is the sum of marriage-based immigrants, men getting Korean nationality after marriage, and all members getting Korean nationality for other reasons. The members of MCF family include an MCF member, spouse, and their children (Table 1).

The number of MCFs in Korea has increased rapidly after 2002. The major increase is from marriage-based immigrants, due to the inability of a high number of single male farmers and low-income men in the city in procuring a spouse. The numbers have increased over a period of time: 142,015 in 2007, 221,548 in 2010, 281,295 in 2013, and 294,663 in 2015 (2). The numbers of all members of MCF have increased from 328,000 in 2007, 564,000 in 2010, 754,000 in 2013, to 889,000 in 2015 (marriage-based immigrants and men acquiring Korean nationality after marriage, 295,000; children under 8 years old, 198,000; other family members including spouse, 396,000). The number is expected to increase further and the total number of MCFs is expected to increase to a million (2,3). Hence, a social policy for their management is necessary.

The number of marriages in MCF and the percentage in the total number of marriages in Korea has shown a decline: 36,629 (11.2%) in 2008, 29,224 (8.9%) in 2012, 22,462 (7.4%) in 2015. The number of births in MCF increased from 13,443 in 2008 to 20,312 in 2010, and hit a new high of 22,908 in 2012. However, it declined to 21,174 in 2014 and 19,729 in 2015. MCF births contribute significantly to the total number of births in Korea: 2.9% in 2008, 4.3% in 2010, 4.9% in 2014, 4.5% in 2015. The numbers of MCF births are about 1/20th of the total births in Korea (4).

It was in 2006 that Korea initiated setting up and implementing MCF support policies. The Multicultural Family Support Act was enacted in 2008 and amended in 2012 (1). Since marriage-based immigrants (25,623 males and 119,649 females in 2015) and married naturalized person (10,308 males and 82,941 females in 2015) in MCF are mostly females (2), the socio-economic and medical support system currently in operation, was included under the Ministry of Gender Equality and Family from 2010. The first MCF support policy was rolled out from 2010 to

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Table 1. Definition of MCF according to the Korean Multicultural Family Support Act (2012)

Term	Definition
The No. of MCFs	Marriage based immigrants AND Men getting Korean nationality after marriage according to the Nationality Act AND All members getting Korean nationality for other reasons
The No. of people in MCFs	One's own self of MCF Spouse AND Children AND Other family members

MCF = multi-cultural family.

2012 (5), and the second MCF supporting policy for 2013 to 2017 (6) from the ministry of Gender Equality and Family is currently operational.

This study is a statistical analysis of MCF birth factors in 2015. It surveyed MCF births' data from Statistics Korea. Of the total numbers of births in 2015, the number of MCF births was 19,729 (4.5%) and the number of births in Korean families (non-MCFs or KFs) was 418,691 (95.5%) (7).

The objective of this study is to determine the number and frequency of MCF births in Korea, and to compare the birth distribution by regional groups. We hypothesized that there is a higher number of adverse outcomes in MCF births compared to KF births. We compared the 2 groups with respect to birth weight (BW), gestational age (GA), birth order, place of delivery, cohabitation period before birth of the first child, and parental education level. Besides, the objective of this study was to provide the statistical data of MCF births in 2015, which will help in planning MCF obstetric and neonatal medical care in Korea for the future.

MATERIALS AND METHODS

We extracted the data of MCF births in 2015 from Statistics Korea, and the number of KF births was considered as total births excluding MCF (7,8). Of the total number of births in 2015 (438,420), the number of MCF births was 19,720 (4.5%) and the number of non-MCF (KF) births was 418,691 (95.5%). The research subjects are the people in the MCF births group and the control group includes the people in the KF births group.

We ascertained the percentage of MCF births per year from 2008 to 2015. The statistical data of birth between 2 groups (MCF vs. KF) were compared with respect to the geography, number of marriages by region, BW (very low BW infant [VLBWI] with BW < 1.5 kg; low BW infant [LBWI] with BW < 2.5 kg; normal BW infant [NBWI] with BW 2.5–3.9 kg; high BW infant [HBWI] with BW ≥ 4.0 kg), GA, birth order, place of delivery, cohabitation period of parents before the first child, and parental education level. We analyzed if the MCF group has higher adverse outcomes compared to the KF group.

Table 2. Total number of live births, the number and frequency of live births in MCFs in Korea (2008–2015)

Year	No. of total live births	No. live births in MCFs	%
2008	465,892	13,443	2.9
2009	444,849	19,024	4.3
2010	470,171	20,312	4.3
2011	471,265	22,014	4.7
2012	484,550	22,908	4.7
2013	436,455	21,290	4.9
2014	435,435	21,174	4.9
2015	438,420	19,729	4.5
2015	16,166 (multiple births)	580 (multiple births)	3.6

Data adapted from Statistics Korea.
MCF = multi-cultural family.

Statistical analysis

The χ^2 test was used to compare the proportions of adverse birth outcomes between MCF and KF. All analyses were performed using STATA software version 12.1 (StataCorp, College Station, TX, USA), *P* values of < 0.050 were considered statistically significant.

RESULTS

The mean GA was same at 38.6 ± 1.7 weeks, and mean BW was 3,207 ± 470 and 3,204 ± 470 grams in the MCF and KF respectively, with no statistically significant difference.

Number of MCF births in Korea (2015)

The number and percentage of MCF births among the total births was 13,443 (2.9%) in 2008, 22,908 (4.7%) in 2012, and 19,729 (4.5%) in 2015. It showed a decline in total number from 2012 to 2015, but the percentage has remained constant (4.3% → 4.9% → 4.5%) from 2008 to 2015 (Table 2).

Number of MCF births by region in Korea (2015)

The number of MCF births by region was in the following order (Table 3); Gyeonggi-do, Seoul, Gyeongsangnam-do, Incheon, Gyeongsangbuk-do, and Busan. In the case of KF births were in the following order; Gyeonggi-do, Seoul, Gyeongsangnam-do, Busan, Incheon, and Gyeongsangbuk-do.

Comparing the 2 groups by region, the proportion of births in the capital area (Seoul, Incheon, and Gyeonggi-do) was 49.9% in MCF group and 50.7% in KF group, whereas outside the capital, it was 50.1% in the MCF group and 49.3% in KF group (*P* = 0.038). The proportions of births in the MCF and KF groups were 39.7% and 44.1% in major cities, and 60.4% and 55.9% in non-major cities, respectively (*P* < 0.001).

However, the percentage of MCF births in total number of live births by region showed a different trend from the number of MCF births. The percentage of MCF births by region was in the following order; Jeollanam-do, Jeju, Jeollabuk-do, Chungcheongnam-do, Chungcheongbuk-do, Gangwon-do, and Gyeong-

Table 3. Number and percentage of multi-cultural births by geography in Korea (2015)

Region	No. of MCF births (A)	%	No. of KF birth	%	No. of total live births (B)	A/B, %
Seoul	3,745	19.0	79,260	18.9	83,005	4.5
Busan	1,020	5.2	25,625	6.1	26,645	3.8
Daegu	645	3.3	18,793	4.5	19,438	3.3
Incheon	1,080	5.5	24,411	5.8	25,491	4.2
Gwangju	447	2.3	11,994	2.9	12,441	3.6
Daejeon	482	2.4	13,292	3.2	13,774	3.5
Ulsan	406	2.1	11,326	2.7	11,732	3.5
Sejong	62	0.3	2,646	0.6	2,708	2.3
Gyeonggi-do	5,022	25.5	108,473	25.9	113,495	4.4
Gangwon-do	525	2.7	10,404	2.5	10,929	4.8
Chungcheongbuk-do	658	3.3	12,905	3.1	13,563	4.9
Chungcheongnam-do	976	4.9	17,628	4.2	18,604	5.2
Jeollabuk-do	880	4.5	13,207	3.2	14,087	6.2
Jeollanam-do	1,001	5.1	14,060	3.4	15,061	6.6
Gyeongsangbuk-do	1,070	5.4	21,240	5.1	22,310	4.8
Gyeongsangnam-do	1,357	6.9	28,180	6.7	29,537	4.6
Jeju	353	1.8	5,247	1.3	5,600	6.3
Total	19,729	100.0	418,691	100.0	438,420	4.5
Capital area (Seoul, Incheon, and Gyeonggi-do)	9,847	49.9*	212,144	50.7	221,991	4.4
Others	9,882	50.1*	206,547	49.3	216,429	4.6
Major cities (metropolitan city)	7,825	39.7†	184,701	44.1	192,526	4.1
Others	11,904	60.4†	233,990	55.9	245,894	4.8

Data adapted from Statistics Korea.
MCF = multi-cultural family, KF = Korean family.
*$P = 0.038$; †$P < 0.001$.

Table 4. Number and percentage of MCF marriages by geography in Korea (2015)

Region	No. of MCF marriages (A)	%	No. of KF marriages	%	No. of total marriages (B)	A/B, %
Seoul	5,007	22.3	61,004	21.8	66,011	7.6
Busan	1,160	5.2	17,711	6.3	18,871	6.1
Daegu	747	3.3	11,978	4.3	12,725	5.9
Incheon	1,155	5.1	16,240	5.8	17,395	6.6
Gwangju	459	2.0	7,577	2.7	8,036	5.7
Daejeon	513	2.3	8,404	3.0	8,917	5.8
Ulsan	462	2.1	7,097	2.5	7,559	6.1
Sejong	67	0.3	1,440	0.5	1,507	4.4
Gyeonggi-do	5,720	25.5	69,752	24.9	75,472	7.6
Gangwon-do	452	2.0	7,489	2.7	7,941	5.7
Chungcheongbuk-do	661	2.9	8,304	3.0	8,965	7.4
Chungcheongnam-do	921	4.1	11,553	4.1	12,474	7.4
Jeollabuk-do	772	3.4	8,390	3.0	9,162	8.4
Jeollanam-do	755	3.4	8,604	3.1	9,359	8.1
Gyeongsangbuk-do	1,002	4.5	13,430	4.8	14,432	6.9
Gyeongsangnam-do	1,240	5.5	17,679	6.3	18,919	6.6
Jeju	305	1.4	3,427	1.2	3,732	8.2
Oversea	1,064	4.7	287	0.1	1,351	78.8
Total	22,462	100.0	280,366	100.0	302,828	7.4
Capital (Seoul, Incheon, and Gyeonggi-do)	11,882	52.9*	146,996	52.4	158,878	7.5
Others	10,580	47.1*	133,370	47.6	143,950	7.4
Major cities (metropolitan city)	9,503	42.3*	130,011	46.4	139,514	6.8
Others	12,959	57.7*	150,355	53.6	163,314	7.9

Data adapted from Statistics Korea.
MCF = multi-cultural family, KF = Korean family.
*$P < 0.001$.

sangbuk-do. The percentage of MCF births was significantly higher in non-major cities than major cities.

Number of MCF marriage by region in Korea (2015)

The numbers of MCF marriages by region were as follows (Ta-

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ble 4): 5,720 in Gyeonggi-do, 5,007 in Seoul, and 1,240 in Gyeongsangnam-do. The order of frequency are as follows; Gyeonggi-do, Seoul, Gyeongsangnam-do, Busan, and Incheon in MCF group, and Gyeonggi-do, Seoul, Busan, Gyeongsangnam-do, and Incheon in KF group.

Comparative statistics of MCFs and KFs in Korea (2015)

The details of BW in the MCF and KF groups are shown in Table 5. Based on BW classification as VLBWI, LBWI, NBWI, and HBWI, there was no significant difference between MCF and KF groups: VLBWI (0.6% vs. 0.7%, $P = 0.092$), LBWI (5.5% vs. 5.8%, $P < 0.168$), and NBWI (90.6% vs. 91.0%, $P = 0.342$). However, there was a significant difference between the 2 groups in HBWI cases (3.6% vs. 3.2%, $P = 0.001$). The data indicates that no adverse outcomes related to BW in the MCF group.

The data of GA in both groups are shown in Table 6. The proportion of births according to GA between the MCF and KF groups were as follows: (< 37 weeks; 6.5% vs. 7.0%, $P = 0.015$), (37–39 weeks; 65.1% vs. 64.8%, $P = 0.138$), and (≥ 40 weeks; 28.0% vs. 28.1%, $P = 0.840$) respectively. In fact, the proportion of preterm babies in the KF group was higher rather than those in the MCF group. Thus, no adverse outcomes related to GA was seen in the MCF group.

Table 5. Number of births by BW in MCFs in Korea (2015)

BW, kg	Multicultural families	%	KFs	%	Total	%
< 1.5	117	0.6	2,915	0.7	3,032	0.7
1.5–1.9	176	0.9	4,023	1.0	4,199	1.0
2. 0–2.4	793	4.0	17,159	4.1	17,952	4.1
2.5–2.9	4,365	22.1	91,298	21.8	95,663	21.8
3.0–3.4	9,026	45.7	195,925	46.8	204,951	46.7
3.4–3.9	4,486	22.7	93,589	22.4	98,075	22.4
4.0–4.4	659	3.3	12,524	3.0	13,183	3.0
≥ 4.5	55	0.3	905	0.2	960	0.2
Unknown	52	0.3	353	0.1	405	0.1
Total	19,729	100.0	418,691	100.0	438,420	100.0
VLBWI	117	0.6*	2,915	0.7	3,032	0.7
LBWI	1,086	5.5†	24,097	5.8	25,183	5.7
NBWI	17,877	90.6‡	380,812	91.0	398,689	90.9
HBWI	714	3.6§	13,429	3.2	14,143	3.2

Data adapted from Statistics Korea.
BW = birth weight, MCF = multi-cultural family, VLBWI = very low BW infant (BW < 1.5 kg), LBWI = low BW infant (BW < 2.5 kg), NBWI = normal BW infant (BW 2.5–3.9 kg), HBWI = high BW infant (BW ≥ 4.0 kg).
*$P = 0.092$; †$P < 0.168$; ‡$P = 0.342$; §$P = 0.001$.

Table 6. Number of births by GA in MCFs in Korea (2015)

GA, wk	MCFs	%	KFs	%	Total	%
≤ 23	9	0.1	192	0.1	201	0.1
24–27	36	0.2	952	0.2	988	0.2
28–31	101	0.5	2,267	0.5	2,368	0.5
32–35	529	2.7	11,873	2.8	12,402	2.8
36	606	3.1	13,888	3.3	14,494	3.3
37	1,812	9.2	40,793	9.7	42,605	9.7
38	5,207	26.4	111,351	26.6	116,558	26.6
39	5,820	29.5	119,210	28.5	125,030	28.5
40	4,537	23.0	96,953	23.2	101,490	23.2
41	917	4.6	20,233	4.8	21,150	4.8
42	54	0.3	532	0.1	586	0.1
≥ 43	7	0	48	0	55	0
Unknown	94	0.5	399	0.1	493	0.1
Total	19,729	100.0	418,691	100.0	438,420	100.0
< 37	1,281	6.5*	29,172	7.0	30,453	6.9
37–39	12,839	65.1†	271,354	64.8	284,193	64.8
≥ 40	5,515	28.0‡	117,766	28.1	123,281	28.1

Data adapted from Statistics Korea.
GA = gestational age, MCF = multi-cultural family, KF = Korean family.
*$P = 0.015$; †$P = 0.138$; ‡$P = 0.840$.

Table 7. Number of births by birth order in MCFs in Korea (2015)

Birth order	MCFs	%	KFs	%	Total	%
1st	10,448	53.0	218,165	52.1	228,613	52.1
2nd	7,431	37.7	158,699	37.9	166,130	37.9
3rd	1,506	7.6	35,603	8.5	37,109	8.5
4th	192	1.0	4,197	1.0	4,389	1.0
5th	43	0.2	672	0.2	715	0.2
6th	10	0.1	157	0	167	0
7th	2	0	52	0	54	0
≥ 8th	1	0	21	0	22	0
Unknown	96	0.5	1,125	0.3	1,221	0.3
Total	19,729	100.0	418,691	100.0	438,420	100.0
1st	10,448	53.2*	218,165	52.3	228,613	52.3
2nd	7,431	37.9	158,699	38.0	166,130	38.0
≥ 3rd	1,754	8.9	40,702	9.8	42,456	9.7

Data adapted from Statistics Korea.
MCF = multi-cultural family, KF = Korean family.
*$P = 0.019$.

Table 8. Number of births by place of delivery in MCFs in Korea (2015)

Birth place	MCFs	%	KFs	%	Total	%
Home	294	1.5*	2,184	0.5	2,478	0.6
Hospital	19,309	97.9†	415,173	99.2	434,482	99.1
Others	112	0.6‡	1,059	0.3	1,171	0.3
Unknown	14	0.1	275	0.1	289	0.1
Total	19,729	100.0	418,691	100.0	438,420	100.0

Data adapted from Statistics Korea.
MCF = multi-cultural family, KF = Korean family.
*,†,‡$P < 0.001$.

Table 9. Number of births by cohabitation period of parents before the first child in MCFs in Korea (2015)

Cohabitation period, yr	MCFs	%	KFs	%	Total	%
< 1	3,432	17.6*	84,356	20.4	87,788	20.3
1–2	7,342	37.7	141,708	34.3	149,050	34.4
2–3	5,630	28.9	117,517	28.4	123,147	28.4
≥ 3	8,722	44.7	187,487	45.3	196,209	45.3
≥ 4	6,163	31.6	133,185	32.2	139,348	32.2

Data adapted from Statistics Korea.
MCF = multi-cultural family, KF = Korean family.
*$P < 0.001$.

Table 10. Number of births by parental education level in MCFs in Korea (2015)

Parental education	MCFs	%	KFs	%	Total	%
Father						
Uneducated	43	0.2	130	0	173	0
Elementary school	263	1.3	555	0.1	818	0.2
Middle school	1,034	5.2	3,715	0.9	4,749	1.1
High school	8,455	42.9	91,651	21.9	100,106	22.8
University	7,967	40.4	277,214	66.2	285,181	65.0
Advanced degree	1,561	7.9	39,789	9.5	41,350	9.4
Unknown	406	2.1	5,637	1.3	6,043	1.4
Total	19,729	100.0	418,691	100.0	438,420	100.0
< High school	1,340	6.9	4,400	1.1	5,740	1.3
High school	8,455	43.8	91,651	22.2	100,106	23.2
≥ University	9,528	49.3	317,003	76.8	326,531	75.5
Mother						
Uneducated	104	0.5	133	0.0	237	0.1
Elementary school	572	2.9	503	0.1	1,075	0.2
Middle school	2,464	12.5	3,567	0.9	6,031	1.4
High school	7,557	38.3	88,559	21.2	96,116	21.9
University	7,277	36.9	292,029	69.7	299,306	68.3
Advanced degree	1,345	6.8	31,931	7.6	33,276	7.6
Unknown	410	2.1	1,969	0.5	2,379	0.5
Total	19,729	100.0	418,691	100.0	438,420	100.0
< High school	3,140	16.3	4,203	1.0	7,343	1.7
High school	7,557	39.1	88,559	21.3	96,116	22.0
≥ University	8,622	44.6	323,960	77.7	332,582	76.3

Data adapted from Statistics Korea, all variables $P < 0.001$.
MCF = multi-cultural family, KF = Korean family.

The distribution of births by birth order in MCF and KF is shown in Table 7. The percentage of 1st babies in MCF was higher than in KF (53.2% vs. 52.3%, $P = 0.019$). The percentage of 2nd, 3rd, 4th, 5th, 6th, 7th, and 8th babies showed no difference between the 2 groups.

The distribution of births by place of birth in MCF and KF is shown in Table 8. The percentage of home deliveries in MCF was higher than that in KF (1.5% vs. 0.5%, $P < 0.001$) and the percentage of hospital deliveries was lower than in KF (97.9% vs. 99.2%, $P < 0.001$). They showed same results in "other" delivery, not home nor hospital (0.6% vs. 0.3%, $P < 0.001$). Thus, the rate of non-institutional delivery in MCF was higher than in KF.

The distribution of births by period of cohabitation in MCF and KF is shown in Table 9. The percentage of births in a cohabitation period of < 1 year was 17.6, 20.4% in MCF and KF respectively, with a statistically significant difference ($P < 0.001$). However, there was no difference in the proportion of births following a cohabitation period of 1 or more years, between the 2 groups.

The distribution of births by level of parental education in MCF and KF is shown in Table 10. Among both, fathers and mothers, the education level in MCF was lower than in KF. The percentage of uneducated mothers was 0.53% in MCF, and 0.03% in KF, with a statistically significant difference ($P < 0.001$). The parental education up to the elementary and middle school level was also lower in MCF compared to the KCF ($P < 0.001$).

DISCUSSION

In the early 1990s, international marriages accounted for only 1% of total marriages in the Korean society. Since the mid-1990s, the number of international marriages increased and marriages of MCFs accounted for more than 10% of the total marriages since the mid-2000s. In 2006, 'the social integration support plan for the female marriage immigrants' family and people of mixed blood and immigrants was announced. Twenty-one marriage immigrant family support centers (currently multicultural family support centers) were established nationwide. In 2007, the Basic Act on the Treatment of Foreigners in Korea was enacted, and in March 2008, 'The Multicultural Family Support Act' was enacted. In November 2008, 'measures to strengthen customized support for each life cycle of multicultural families' were announced, and in 2009, the Multicultural Family Policy Committee (Chairperson: Prime Minister) was set up. In 2010, the Prime Minister's Office and related ministries jointly established and announced the 1st Multicultural Family Support Policy Basic Plan (2010–2012) (5). In February 2012, through the revision of the Multicultural Family Support Act (1), the Multicultural Family Support Policy Basic Plan has acquired a legal status. The Multicultural Family Support Policy Basic Plan has become a statutory plan that is revised every 5 years, and includes matters relating to basic direction, development policies, and evaluation by sector, system improvement, and financial

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resources and allocation, etc. The 2nd Multicultural Family Support Policy Basic Plan (2013–2017) was finalized in December 2012 (6).

There are reports on the health and medical status of pregnant women in MCFs before year 2009. Kim et al. (9) published a report from the results of a questionnaire-based survey, about the experience and level of support for pregnancy and childbirth of female marriage immigrants, health and public health care status, and policy tasks of MCFs. Only 35.9% of pregnant women received support for pregnancy and childbirth. The need for support among female marriage immigrants, for pregnancy and childbirth related support services, was reported as very necessary by 30.5% of MCF females, generally required by 14.9%, usually required by 12.5%, and scarcely required by 19.6%, indicating that about half of them were in need of support (10, 11). The report presented that among the challenges for married immigrant women, the first was maternal, and child health, especially delayed first antenatal care. The second challenge was maternal and child nutrition, with a high number of low nutritional status and anemic women, and the third challenge was health care and nurturing of the baby (12). It was suggested that there is a high need to strengthen maternal immigrant women's support and education, and access to information for maternal, child health, and perinatal care. In 2012, Lee et al. (13) suggested the need for a special management system for MCFs, for support during perinatal, obstetric, neonatal, pediatric, and adolescent periods, through statistical review and policy framework. The plan to support maternal and child health services for international marriage immigrant women, and the 1st Multicultural Family Support Policy Basic Plan (2010–2012) (5), and 2nd Multicultural Family Support Policy Basic Plan (2013–2017). Multicultural family support centers were created for improving the health and medical care of pregnant women, women during childbirth, and newborn infants. From our results in 2015, neonatal BW and GA in MCF birth showed no adverse outcomes compared to KF birth, and preterm births were lower in MCF than in KF. In BW and GA of newborn infants, MCF has no adverse birth outcomes compared to KF. Many factors such as uterine malnutrition, socio-economic factors, medical risks before or during gestation, and maternal race/ethnicity may contribute to birth outcomes (14,15). Maternal body weight at the time of becoming pregnant and the early development of the placenta determine the fetal growth (16). The proportion of premature and low BW babies has been rising in Korea due to advanced maternal age and multiple pregnancy or assisted conception (17). This situation in Korea may have affected the birth outcomes regardless of the nutritional status of Koreans.

The number of MCF marriages and the percentage of total marriages in Korea have decreased from 36,629 (11.2%) in 2008 to 22,462 (7.4%) in 2015 (4). Among MCF, marriage between Korean men and international women was the highest at 62.6%, followed by Korean women married to international men (22.9%), and others including the naturalized people (14.6%) in 2015. In 2015, among men with multicultural marriage, 22.7% were in the age group of 45 years and above, 21.8% were in their early thirties and 19.1% were in their late 30s. While the ratio of men over 45 has declined, the ratio of those in their late 20s and early 30s is increasing. Among women who married in a multicultural society, 29.8% were in their late 20s, followed by early 30s (21.2%) and early 20s (18.7%). The percentage of those over 35 years old is declining, and the proportion of those in their late 20s and early 30s shows an increasing trend. In 2015, the average age of first marriage was 35.4 years for men and 27.9 years for women. The average age gap at first marriage between men and women who married in MCFs was 7.5 years. In multicultural marriage, male-seniority couples accounted for 77.5%, female-seniority couples accounted for 16.5%, and matching age couples accounted for 6.0%. The number of multicultural marriages was in the following order: Gyeonggi-do (5,720 cases), Seoul (5,007 cases), and Gyeongnam-do (1,240 cases). Among the male foreign nationals in multicultural marriages, China had the highest nationality (9.7%), followed by the United States (7.3%) and Japan (3.6%), and among women, China also had the highest nationality of 27.9%, followed by Vietnam (23.1%) and the Philippines (4.7%).

The number of multicultural births and the multicultural percentage among total births increased from 13,443 (2.9%) in 2008 to 22,908 (4.7%) in 2012, to 21,290 (4.9%) in 2013, and the total number and percentage decreased to 19,729 (4.5%) in 2015. Among the multicultural births, the first child accounted for 53.0%, followed by 37.7% for the second, and 9.6% for the third or above. In terms of births by multicultural type, Korean father and mother of foreign nationality accounted for 65.2%, followed by others (19.6%), and father with foreign nationality and Korean mother (15.2%). In multicultural births, the proportion of births by mother's age was: 25–29 years, 31.6%; 30–34 years, 30.0%; and 20–24 years, 20.1%. The proportion of persons under 25 years of age showed a steady decline, while the proportion of people in their 30s increased. The average age at birth of the mother in multicultural birth was 29.0 years for the first child, 30.1 years for the second child, and 32.0 years for the third child or above. Multicultural parents had a marriage period of 2.1 years until birth of the first child and 65.5% of the children who had married life less than 2 years until the first birth. The number of multicultural births by region was 5,222 births in Gyeonggi-do, 3,745 births in Seoul, and 1,357 births in Gyeongnam-do. According to births by parents' nationality, China as foreign nationality of the father was 6.7%, followed by the US (4.9%) and Japan (1.9%), and for foreign nationality of the mother, Vietnam was the highest (32.6%), followed by China (23.6%) and the Philippines (8.4%).

The number of children (aged 18 or younger) in MCFs increased from 44,258 persons in 2007 to 207,693 persons in 2014

and decreased to 197,550 persons in 2015 (2). In 2015, the distribution of children by age group was 116,068 (58.7%) under 6 years of age, 61,625 (31.2%) between 7–12 years, 12,567 (6.4%) between 13–15 years, 7,290 persons (3.7%). Thus, the proportion of children lower than the age for elementary school enrollment is 58.7%, indicating that the average age is low.

The limitation of this study is the rate of disease prevalence and mortality and/or neonatal mortality were not calculated due to incomplete data on diseases and deaths. Comparing the prevalence of disease between MCF and KF and the mortality rate or neonatal mortality rate by diseases could be the objective of further studies in future.

In conclusion, this study compared several birth related factors between MCF and KF in 2015, based on the recent status of MCF marriages and births in Korea. The hypothesis that MCF has higher proportion of adverse neonatal outcomes compared to that of KF was proved untrue. The average BW and GA in MCF and KF groups were similar, while the frequency of preterm birth classified as high risk, was less in MCF despite the low education level of parents and high frequency of out-of-hospital deliveries. This is due to the government support for perinatal medical system through implementation of the basic plan of family support policy, including measures to strengthen customized support for each MCF based on the stage of life cycle. This study provides important basic data on the births in MCF and the situation in neonatal care in 2015. Subsequent studies on the infantile disease and neonatal death among MCF births are necessary.

DISCLOSURE

The authors have no potential conflicts of interest to disclose.

AUTHOR CONTRIBUTION

Conceptualization: Chung SH, Bae CW. Data curation: Chung SH, Bae CW. Formal analysis: Chung SH, Bae CW. Investigation: Chung SH, Bae CW. Writing - original draft: Chung SH. Writing - review & editing: Bae CW.

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