



## 2023-2024절기 인플루엔자 국가예방접종 지원사업 현황

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### 초 록

2023-2024절기 인플루엔자 국가예방접종 사업에서는 생후 6개월부터 13세 어린이와 임신부 및 65세 이상 어르신의 인플루엔자 예방접종을 지원하였다. 본 논문에서는 2023-2024절기 인플루엔자 국가예방접종 지원사업의 주요 결과를 살펴보고자 한다. 각 대상의 접종률은 어르신과 임신부는 82.5%와 53.0%로 이전 절기 대비 0.6%p와 2.6%p 증가하였고, 어린이는 69.5%로 1.5%p 감소하였다. 인플루엔자 예방접종 후 이상반응 신고는 총 176건으로 10만 건당 신고건 1.5건이었다. 2023-2024절기 주요 결과를 알아보고 향후 인플루엔자 국가예방접종 지원사업 발전을 위한 토대로 활용하고자 한다.

**주요 검색어:** 인플루엔자; 예방접종; 접종률

### 서 론

인플루엔자는 매년 11월부터 다음해 4월까지 계절적으로 유행하는 급성호흡기바이러스 질환으로 갑작스러운 고열, 인후통, 기침, 콧물, 근육통을 일으켜 모든 연령군에서 질병을 초래한다. 특히, 65세 이상 어르신, 영유아, 임신부 등은 인플루엔자 감염 시 이환율 및 사망률이 높아지는 고위험군에 해당한다[1].

우리나라에서는 1997년부터 65세 이상 어르신에게 보건소에서 인플루엔자 국가예방접종을 시행하였고 2015년부터는 민간 위탁의료기관에서 접종까지 지원 범위를 확대하였다. 또한, 65세 이상 어르신에게는 80% 수준의 사망 예방효과가

있는 것으로 알려져 있어 중증질환 및 사망을 낮추기 위해 예방접종은 매우 중요하다[1]. 소아청소년의 인플루엔자 예방접종은 중증 인플루엔자에 대한 효과 63%, 생명을 위협하는 인플루엔자에 대한 효과 75% 수준으로 알려져 있다[2]. 이에, 어린이 인플루엔자 사업에서는 2016년 생후 6개월부터 12개월 미만, 2017년 생후 6개월부터 59개월, 2018년 생후 6개월부터 12세, 2020년 생후 6개월부터 13세 어린이까지 예방접종 지원 대상을 점진적으로 확대하였다[3]. 임신부는 40% 수준의 입원 예방효과[4]와 함께 태아에게 항체를 전달하여 3개월 미만 영아의 경우 53%의 효과, 임신 3기 인플루엔자 예방접종을 한 산모의 영아는 52% 효과[5]가 있는 것으로 알려져 있어 2019년부터 국가예방접종으로 지원하고 있다.

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**핵심요약**

① 이전에 알려진 내용은?

인플루엔자 국가예방접종은 생후 6개월부터 13세 어린이와 임신부 및 65세 이상 어르신을 대상으로 시행하고 있다.

② 새로이 알게 된 내용은?

인플루엔자 접종률은 어린이 69.5%, 임신부 53.0%, 어르신 82.5%로 지난 절기 대비 어르신과 임신부는 각각 0.6%p, 2.6%p 증가하였고 어린이는 1.5%p 감소하였다.

③ 시사점은?

코로나바이러스감염증-19 대유행 이후 2022-2023절기부터 인플루엔자 바이러스가 계절성 유행 양상이 시작되어 인플루엔자 고위험군인 어린이와 임신부 및 어르신의 감염 예방이 중요하다.

2020-2021절기에는 코로나바이러스감염증-19(코로나 19) 대유행에 따른 인플루엔자와 코로나19의 동시 유행을 대비하기 위해 62세부터 64세에 해당하는 어르신, 14세부터 18세 청소년, 장애인 연금·수당, 의료급여 수급권자에게 인플루엔자 예방접종을 지원하였다.

본 논문에서는 2023-2024절기 인플루엔자 국가예방접종 지원사업 대상에 따른 예방접종 실적 등 주요 결과를 살펴보고, 향후 인플루엔자 국가예방접종 사업의 원활한 운영을 위한 기초자료로 활용하고자 한다.

**본 론**

**1. 2023-2024절기 인플루엔자 국가예방접종 지원사업 개요**

2023-2024절기 인플루엔자 국가예방접종 사업에서는 생후 6개월부터 13세 어린이, 임신부, 65세 이상 어르신을 대상으로 인플루엔자 예방접종을 지원하였다. 인플루엔자 예방접종은 약 2주 후부터 항체가 생성되어 평균 6개월 정도 지속되고 유행 시기 등을 종합적으로 고려하여 사업기간을 선정하였다(표 1). 어린이는 2회 접종 소아의 적절한 면역획득(1차 접종 후 최소 4주 간격으로 2차 접종) 기간을 고려하여 9월부터 사업을 시작하였다. 어르신은 사업시작 초기에 접종이 집중되므로 안전한 접종을 위해 연령별로 접종 시기를 구분하여 시행하였다.

인플루엔자 예방접종은 전국에 소재하고 있는 보건소, 보건지소, 보건진료소와 위탁의료기관 22,400개소에서 시행하였으며 대상자는 주소지와 관계없이 해당 기관에 방문하여 인플루엔자 4가 백신으로 국가지원 접종을 받을 수 있었다. 2023-2024절기 인플루엔자 예방접종은 어르신 82.0%, 임신부 55.0%, 어린이(1회 및 2회 1차) 75.0% 접종률을 목표로 사업을 추진하였다.

예방접종률은 질병관리청 질병보건통합관리시스템을 활용하여 산출하였다. 예방접종통합관리시스템에 등록된 대상 중 해당 연도 출생자를 구분하였고, 예방접종 기록은 위탁의료기관과 보건소에서 시행하고 전산 등록된 예방접종 기록을

**표 1. 2023-2024절기 인플루엔자 국가예방접종 지원사업 대상자 및 사업기간**

대상자	사업기간	
어린이(2010.1.1.-2023.8.31. 출생아)	2회 접종 대상 <sup>a)</sup>	2023.9.20.-2024.4.30.
	1회 접종 대상(13세 이하)	2023.10.5.-2024.4.30.
임신부		2023.10.5.-2024.4.30.
어르신(1958.12.31. 이전 출생자)	75세 이상	2023.10.11.-2024.4.30.
	70-74세 이상	2023.10.16.-2024.4.30.
	65-69세 이상	2023.10.19.-2024.4.30.

<sup>a)</sup>9세 미만 인플루엔자 예방접종을 처음 받거나 2023년 6월 30일까지 총 2회 미만 접종한 대상.

기준으로 산출하였다. 어린이 접종률은 1회 접종자 대상의 접종률과 2회 접종 대상자 중 1차 접종 완료자에 대한 접종률로 산출하였다. 임신부는 당해 절기 대상자 수 확인이 어려운 점을 고려하여, 공개된 2022년 출생아 수로 대체하여 산출하였다. 예방접종 건수와 예방접종률은 국가지원 및 본인부담 접종 건을 포함하여 산출하였다.

## 2. 어르신 인플루엔자 예방접종 실적

어르신 인플루엔자 사업대상 9,766,851명 중 8,059,311명이 접종하여, 접종률은 82.5%로 지난 절기 81.9% 대비 0.6%p 증가하였다(그림 1).

어르신 대상은 사업 초기에 접종이 집중되므로 안전한 접종을 위해 연령에 따라 세 구간으로 분산하였고 나이가 많은

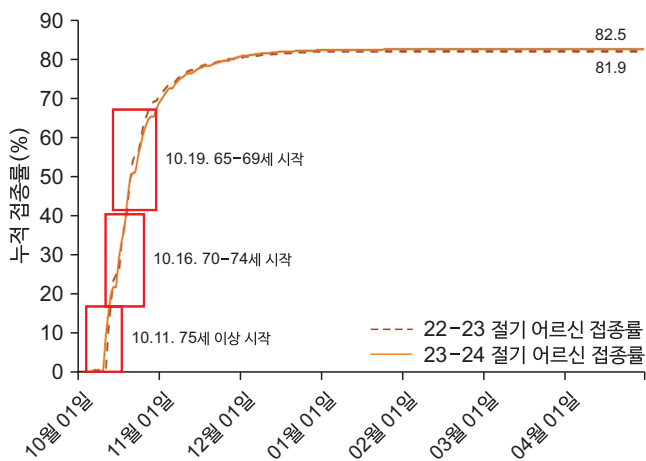


그림 1. 어르신 누적 접종률 지난 절기 비교

어르신들이 먼저 접종할 수 있도록 접종 시기를 구분하였다.

접종 기관별로는 보건소에서 4.4% (354,477명), 위탁의료기관에서 95.6% (7,704,834명)가 접종하여 지난 절기 보건소 4.6%, 위탁의료기관 95.3%에 비해 위탁의료기관에서의 접종이 소폭 증가하였다(표 2). 어르신 지역별 접종률은 전북(85.5%), 전남(85.3%), 충북(84.6%) 순으로 높았으며, 접종 건수는 경기(2,129,402건), 서울(1,727,198건)이 많았다.

인플루엔자 및 코로나19 예방접종은 동시접종이 가능하고 일부 사업기간이 맞물려 있어 어르신 대상의 동시접종률을 확인해 보았다. 어르신 사업대상 중 동시접종을 실시한 인구는 질병보건통합관리시스템을 활용하여 코로나19 예방접종관리시스템과 예방접종통합관리시스템을 통해 확인하였다. 어르신 사업대상 중 총 991,969명(10.2%)이 동시접종을 받았는데 이는 어르신 인플루엔자 접종자의 12.3%에 해당하고 지난 절기(308,117명)보다 3배 이상 증가한 것으로 2023-2024절기에 인플루엔자와 코로나19 백신 동시접종을 권고한 효과로 볼 수 있다.

## 3. 임신부 인플루엔자 예방접종 실적

임신부 대상으로는 2019년부터 인플루엔자 예방접종을 지원하고 있다. 2023-2024절기에는 접종대상자 253,598명 중 134,357명이 접종하였다. 접종률은 53.0%로 지난 절기 50.4% 대비 2.6%p 증가하였다. 접종 기관별로는 보건소에서 0.4% (599명), 위탁의료기관에서 99.6% (133,758명)가 접

표 2. 절기별, 접종기관별 인플루엔자 접종실적

구분	대상자 수	접종실적			예방접종률	
		계	보건소	위탁기관		
어르신	2023-2024절기	9,766,851	8,059,311 (100.0%)	354,477 (4.4%)	7,704,834 (95.6%)	82.5%
	2022-2023절기	9,310,653	7,629,522 (100.0%)	357,603 (4.6%)	7,271,919 (95.3%)	81.9%
임신부	2023-2024절기	253,598	134,357 (100.0%)	599 (0.4%)	133,758 (99.6%)	53.0%
	2022-2023절기	265,262	133,735 (100.0%)	543 (0.4%)	133,192 (99.6%)	50.4%
어린이	2023-2024절기	5,127,904	3,562,735 <sup>a)</sup> (100.0%)	29,832 <sup>a)</sup> (0.8%)	3,532,903 <sup>a)</sup> (99.2%)	69.5% <sup>a)</sup>
	2022-2023절기	5,333,556	3,785,738 <sup>a)</sup> (100.0%)	32,669 <sup>a)</sup> (0.9%)	3,753,069 <sup>a)</sup> (99.1%)	71.0% <sup>a)</sup>

단위: 명(%). <sup>a)</sup>1회 접종 및 2회 접종자의 1차 접종 건 기준.

중하여 지난 절기와 비슷하였다(표 2). 지역에 따른 임신부 접종률은 울산(62.5%), 서울(58.0%), 강원(57.9%) 순이었고, 경기(77,910건)와 서울(40,608건) 순으로 접종 건수가 많았다.

#### 4. 어린이 인플루엔자 예방접종 실적

2023-2024절기 어린이 대상 접종률은 69.5%로 대상자 5,127,904명 중 3,562,735명(1회 접종, 2회 1차 접종 포함)이 접종하였고(표 2), 지난 절기 대비 접종률(71.0%)이 0.6%p 감소하였다(그림 2).

연령에 따른 접종률은 생후 6-59개월 82.5%, 60-83개월 75.7%, 7-9세는 68.8%, 10-12세는 61.6%, 13세는 49.2%

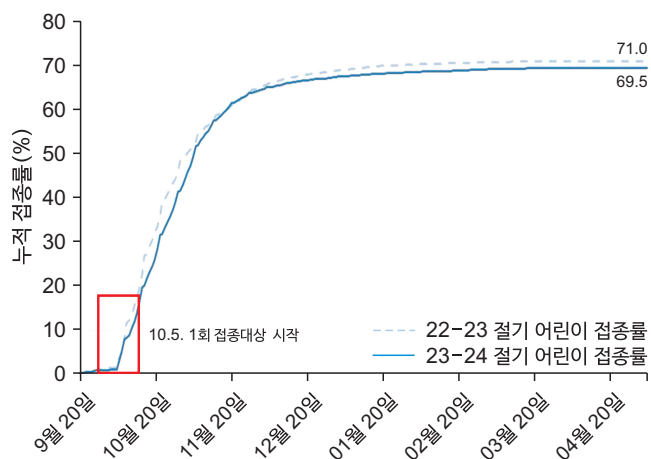


그림 2. 어린이 누적 접종률 지난 절기 비교

로 지난 절기와 비슷하게 접종률이 높을수록 연령이 낮아짐을 확인하였다. 접종 기관별로는 전체 3,797,079건(1회 접종, 2회 1차 및 2차 접종 포함) 중 보건소에서 31,748건(0.8%), 위탁의료기관에서 3,765,331건(99.2%) 접종하였다. 지역에 따른 어린이 접종률은 인천 72.8%, 충남 72.3%, 경기 70.9% 순으로 높았으며, 연령대별로는 6-59개월 84.7%로 인천이 높았고, 60-83개월 78.7%로 인천과 충남이 높았고, 7-9세 72.3%로 인천이 높았고, 10-12세 65.0%, 13세 53.3%로 충남이 높았다.

#### 5. 인플루엔자 예방접종 후 이상반응 신고현황

2023-2024절기 인플루엔자 예방접종 후 이상반응 신고는 176건으로 예년보다 다소 증가하였으나 10만 건당 신고 건 1.5건이었다(2019-2020절기 105건, 2020-2021절기 1,626건, 2021-2022절기 108건, 2022-2023절기 118건). 어린이 이상반응 신고는 41건(작년 44건), 임신부 이상반응 신고는 38건(작년 0건), 어르신 이상반응 신고는 97건(작년 74건)이었다(표 3).

예방접종 후 신고된 이상반응 종류는 일반 이상반응 166건(94.3%), 중증 이상반응 10건 중 사망 4건(2.3%), 아나필락시스 의심 1건(0.6%), 중환자실 입원 등 5건(2.8%)이었다.

표 3. 2023-2024절기 인플루엔자 예방접종 후 신고된 이상반응 종류

구분	계 (A=B+C)	일반 이상반응(B)	중증 이상반응			예방접종 실적(D)	10만 건당 이상반응 신고율 (E=A/D*10 <sup>5</sup> )
			소계 (C=C1+C2+C3)	사망 (C1) <sup>a)</sup>	아나필락시스 의심 (C2)		
총계	176	166	10	4	1	11,756,403	1.50
어르신	97	89	8	4	0	-	-
임신부	38	38	0	0	0	-	-
어린이	41	39	2	0	1	-	-

단위: 건. --not available. (A) 누계 기간: 2023.9.20.-2024.4.30. (예방접종 후 이상반응으로 의심되어 신고된 건으로 의료기관이나 보건소에서 신고한 정보를 기반으로 산출하였으며, 백신과 이상반응 간 인과성을 제시하는 것은 아님. 신고현황 분류는 새로운 정보 추가 시 변경될 수 있음). (B) 일반 이상반응은 예방접종 후 접종부위 발적, 통증, 부기, 근육통, 발열, 두통, 오한 등 흔하게 발생하는 증상을 포함. (C) 중증 이상반응은 다음의 사례 포함. ① 사망, ② 아나필락시스 의심, ③ 주요 이상반응: 중증이상반응 신속대응 등. <sup>a)</sup>사망: 심정지(1), 기타(3), <sup>b)</sup>주요 이상반응: 폐혈증(2), 갈랭-바레 증후군(1), 뇌증/뇌염(1), 위팔신경종 말초신경병증(1).

## 결 론

2023-2024절기 인플루엔자 국가예방접종 지원사업은 생후 6개월부터 13세 어린이, 임신부, 65세 이상 어르신을 대상으로 시행하였다. 어르신과 임신부는 지난 절기 대비 접종률이 증가하였고 어린이 접종률은 감소하였다. 이는 최근 5년 중 인플루엔자가 가장 많이 발생한 가운데 초기 접종 시기에 어린이들 사이에 유행한 것이 주요 원인으로 보인다.

코로나19 발생 이후 인플루엔자 유행은 없었으나 2022-2023절기부터 계절성 유행 양상이 시작되었고[6] 2023-2024절기 의사환자분율은 과거 절기 대비 학생층에서 높은 발생이 지속되었다. 이에 인플루엔자 접종을 독려하기 위해 대상별 맞춤 홍보와 안전한 예방접종을 위한 관리를 강화하여 2024-2025절기 인플루엔자 국가예방접종 지원사업을 준비할 필요가 있다.

## Declarations

**Ethics Statement:** Not applicable.

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**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Author Contributions:** Conceptualization: SHA, WKL. Data curation: SHA, HWH, MJK, YRK, JYL. Methodology: SHA, HWH, MJK. Supervision: WKL, DWL, YRK. Writing

– original draft: SHA, MJK, WKL. Writing – review & editing: SHA, WKL, DWL.


## Supplementary Materials

Supplementary data are available online.

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# Immunization Program against Influenza in Korea, 2023–2024 Season

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## ABSTRACT

The national influenza vaccination program for the 2023–2024 season targeted influenza immunization for children aged 6 months to 13 years, pregnant women, and seniors aged 65 years and older. This study aimed to analyze the primary outcomes of the national influenza vaccination program for the specified season. The vaccination rates for the identified groups were 82.5% for older adults and 53.0% for pregnant women, reflecting increases of 0.6 and 2.6 percentage points, respectively, compared with the corresponding values in the preceding season. Conversely, the vaccination rate for children declined by 1.5 percentage points, reaching 69.5%. There were 176 reported cases of adverse events following influenza vaccination, equaling 1.5 reports per 100,000 vaccinations. We intend to investigate the principal findings for the 2023–2024 season and use them as a foundation for improving the national influenza vaccination program in the future.

**Key words:** Influenza; Immunization; Vaccination coverage

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## Introduction

Influenza is an acute respiratory viral disease, which is most prevalent seasonally from November to April. It can affect all age groups, with symptoms such as sudden fever, sore throat, cough, runny nose, and muscle aches. Older adults (aged 65 and above), young children, infants, and pregnant women are considered high-risk groups because of their higher morbidity and mortality rates from influenza infection [1].

In the Republic of Korea, a national influenza vaccination program for older adults aged 65 and above has been available

through public health centers since 1997, and in 2015 the scope of the program was expanded to include private medical institutions under contract. Vaccination is known to reduce mortality by up to 80% among older adults aged 65 and above, making it crucial for preventing severe disease and death [1]. Similarly, influenza vaccination is effective in reducing the risk for severe and life-threatening influenza by 63% in children and 75% in adolescents [2]. Accordingly, the influenza vaccination program for children has expanded gradually: in 2016, eligibility included infants and children aged 6 months to under 12 months; in 2017, it extended to those aged 6 months to

### Key messages

① What is known previously?

Individuals aged 6 months to 13 years, pregnant women, and those aged 65 years and older are eligible for the national influenza vaccination program.

② What new information is presented?

The influenza vaccination rates among children, pregnant women, and older adults were 69.5%, 53.0%, and 82.5%, respectively. Compared with the previous season, in the 2023–2024 season, vaccination rates for older adults and pregnant women increased by 0.6 and 2.6 percentage points, respectively, whereas the rate for children declined by 1.5 percentage points.

③ What are implications?

Following the coronavirus disease 2019 pandemic, seasonal influenza viruses began circulating during the 2022–2023 season, highlighting the need to prevent infections in children, pregnant women, and older adults.

59 months; by 2018, to children aged 6 months to 12 years; and in 2020, to those aged 6 months to 13 years [3]. For pregnant women, influenza vaccination reduces hospitalization by 40% [4] and offers 53% protection for infants under 3 months by passing antibodies to the fetus. Moreover, vaccination during the third trimester is 52% effective in protecting the child [5]. Consequently, the national influenza vaccination program for pregnant women has been in place since 2019.

During the 2020–2021 season, the influenza vaccination program was made available to older adults aged 62–64 years, adolescents aged 14–18 years, and recipients of disability pensions/allowances and medical aid. This was in preparation for the potential overlap of influenza and coronavirus disease 2019 (COVID-19) outbreaks during the pandemic.

This report reviews the key achievements of the national

influenza vaccination program for the 2023–2024 season, including vaccination performance, and aims to provide baseline data for future operation of the program.

### Main text

#### 1. Overview of the National Influenza Vaccination Program for the 2023–2024 Season

For the 2023–2024 influenza vaccination season, children aged 6 months to 13 years and older adults aged 65 and above were targeted. The vaccination period was selected considering the influenza season and the fact that antibodies are formed approximately two weeks after vaccination and lasts for approximately six months (Table 1). For children, the program began in September, allowing sufficient time for them to acquire adequate immunity through two doses (with at least four weeks between doses). For older adults, the vaccination period was adjusted according to age to ensure safe administration, as vaccinations were concentrated in the early phase of the program.

Vaccinations were provided at 22,400 locations nationwide, including at public health centers, health subcenters, primary health care posts, and contracted medical institutions. Eligible individuals could receive government-subsidized quadrivalent influenza vaccine by visiting any of the listed institutions, regardless of their place of residence. This season's program aimed to achieve vaccination rates of 82% for older adults, 55% for pregnant women, and 75% for children (single dose and first of two doses).

The vaccination rate was calculated using the Integrated Disease Health Management System of the Korea Disease Control and Prevention Agency. Among the individuals registered in the Integrated Vaccination Management System, those

**Table 1.** Vaccination target and period, 2023–2024 season

Vaccination target		Vaccination period
Children (Born in Jan. 1, 2010–Aug. 31, 2023)	Two doses of flu vaccine <sup>a)</sup>	2023.9.20.–2024.4.30.
	One doses of flu vaccine (under 13 yr)	2023.10.5.–2024.4.30.
Pregnant women		2023.10.5.–2024.4.30.
Elderly people (Born before Dec. 31, 1958)	Over 75 yr	2023.10.11.–2024.4.30.
	70–74 yr above	2023.10.16.–2024.4.30.
	65–69 yr above	2023.10.19.–2024.4.30.

<sup>a)</sup>Under the age of 9 who have received influenza vaccination for the first time or who have received a total of less than two doses by June 30, 2023.

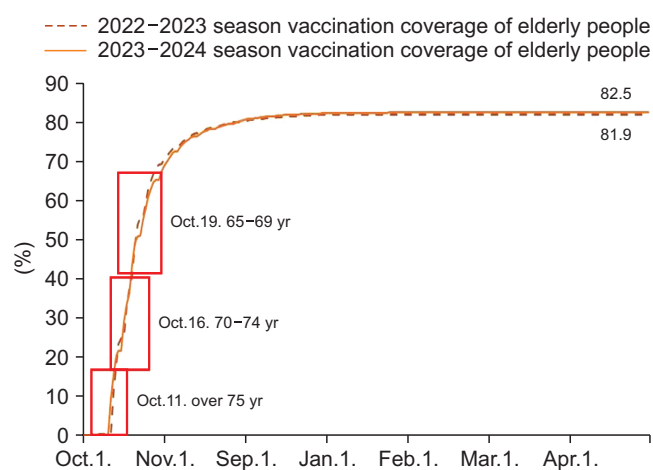
born in the applicable year were identified. Immunization records were compiled by contracted medical institutions and public health centers, and vaccination rates were calculated according to these electronic records. The vaccination rate among children was calculated on the basis of the percentage of children receiving a single dose and those completing the first of two doses. The vaccination rate for pregnant women was estimated using publicly available data on the number of children born in 2022, given the challenge of identifying the actual number of eligible individuals for that season. Both government-subsidized and out-of-pocket vaccinations were included in the calculation of vaccination cases and rates.

## 2. Performance of Influenza Vaccination for Older Adults

Among 9,766,851 older adults eligible for the influenza vaccination program, 8,059,311 were vaccinated, representing a vaccination rate of 82.5%, which was an increase of 0.6% from 81.9% in the previous season (Figure 1).

For older adults, vaccinations are typically concentrated in the early stages of the program. Thus, to ensure safety, the vaccination period was divided into three based on age groups, with the oldest group receiving vaccinations first.

Regarding vaccination institutions, 4.4% of vaccinations



**Figure 1.** Number of vaccinations elderly people compared vaccination coverage to last season

were administered at public health centers (n=354,477), and 95.6% at contracted medical institutions (n=7,704,834), showing a slight increase in vaccinations at contracted medical institutions compared with the previous season's figures of 4.6% at public health centers and 95.3% at contracted medical institutions (Table 2). In terms of vaccination rates among older adults by region, North Jeolla Province had the highest rate (85.5%), followed by South Jeolla Province (85.3%) and North Chungcheong Province (84.6%). Gyeonggi Province (n=2,129,402) and Seoul (n=1,727,198) had the highest number of vaccinations administered.

Since the concurrent administration of influenza and COVID-19 vaccines is allowed and a part of the program



**Table 2.** Number of vaccinations by health services

Characteristics	No. of population	No. of vaccinated			Vaccine coverage	
		Total	Public health center	Medical institution		
Elderly people	2023–2024 season	9,766,851	8,059,311 (100.0%)	354,477 (4.4%)	7,704,834 (95.6%)	82.5%
	2022–2023 season	9,310,653	7,629,522 (100.0%)	357,603 (4.6%)	7,271,919 (95.3%)	81.9%
Pregnant women	2023–2024 season	253,598	134,357 (100.0%)	599 (0.4%)	133,758 (99.6%)	53.0%
	2022–2023 season	265,262	133,735 (100.0%)	543 (0.4%)	133,192 (99.6%)	50.4%
Children	2023–2024 season	5,127,904	3,562,735 <sup>a)</sup> (100.0%)	29,832 <sup>a)</sup> (0.8%)	3,532,903 <sup>a)</sup> (99.2%)	69.5% <sup>a)</sup>
	2022–2023 season	5,333,556	3,785,738 <sup>a)</sup> (100.0%)	32,669 <sup>a)</sup> (0.9%)	3,753,069 <sup>a)</sup> (99.1%)	71.0% <sup>a)</sup>

Values are presented as number (%). <sup>a)</sup>1 Shot and first vaccination of 2 shot.

period overlapped, the rate of concurrent vaccination among older adults was also examined. The population of older adults who received both vaccines concurrently was identified through the COVID-19 Vaccination Management System and Integrated Vaccination Management System, using data from the Integrated Disease Health Management System. Among eligible older adults, a total 991,969 (10.2%) received both vaccines, representing 12.3% of those who received the influenza vaccine. This marks a more than three-fold increase compared with the previous season (n=308,117), likely due to recommendations encouraging concurrent vaccination for the 2023–2024 season.

### 3. Performance of Influenza Vaccination for Pregnant Women

Influenza vaccination for pregnant women has been available since 2019. In the 2023–2024 season, 134,357 out of 253,598 eligible pregnant women were vaccinated, resulting in a vaccination rate of 53%. This represents an increase of 2.6% from the previous season’s rate of 50.4%. Regarding the vaccination institutions, 0.4% of vaccinations were administered at public health centers (n=599), while 99.6% occurred

at contracted medical institutions (n=133,758), which is consistent with the previous season (Table 2). In terms of vaccination rates among pregnant women by region, Ulsan had the highest rate (62.5%), followed by Seoul (58.0%) and Gangwon Province (57.9%). Meanwhile, Gyeonggi Province (n=77,910) and Seoul (n=40,608) reported the highest number of vaccination cases.

### 4. Performance of Influenza Vaccination for Children

For the 2023–2024 season, 3,562,735 out of 5,127,904 children were vaccinated, resulting in a vaccination rate of 69.5% (single dose and first of two doses) (Table 2). This represents a decrease of 0.6% from the previous season’s rate of 71.0% (Figure 2).

Vaccination rates by age were 82.5, 75.7%, 68.8%, 61.6%, and 49.2% for children aged 6–59 months, 60–83 months, 7–9 years, 10–12 years, and 13 years, respectively. Vaccination rates were higher in younger age groups, similar to the previous season. In terms of vaccination institutions, among a total of 3,797,079 vaccination cases (including single doses and first and second doses), 31,748 cases (0.8%) were administered

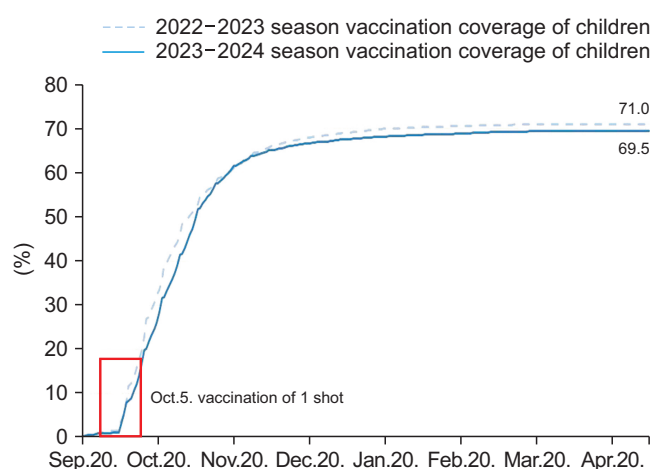
at public health centers, while 3,765,331 cases (99.2%) occurred at contracted medical institutions. By region, Incheon had the highest rate (72.8%), followed by South Chungcheong Province (72.3%) and Gyeonggi Province (70.9%). For specific age groups, the highest rates were found in Incheon for children aged 6–59 months (84.7%), Incheon and South Chungcheong Province for children aged 60–83 months (78.7%), Incheon for children aged 7–9 years (72.3%), South Chungcheong Province for children aged 10–12 years (65.0%),

and South Chungcheong Province for children aged 13 years (53.3%).

### 5. Reports of Adverse Events after Influenza Vaccination

During the 2023–2024 season, 176 cases of adverse events after influenza vaccination were reported, representing a slight increase from the previous season, but the number of reported cases per 100,000 was 1.5 (105, 1,626, 108, and 118 cases in 2019–2020, 2020–2021, 2021–2022, and 2022–2023 seasons, respectively). The number of adverse event cases reported among children, pregnant women, and older adults was 41 (44 in previous season), 38 (0 in previous season), and 97 (74 in previous season), respectively (Table 3).

The types of adverse events reported after vaccination included 166 cases of general adverse events (94.3%); 10 cases of serious adverse events, including four deaths (2.3%); one case of suspected anaphylaxis (0.6%); and five cases requiring admission into intensive care (2.8%).



**Figure 2.** Number of vaccinations children compared vaccination coverage to last season

**Table 3.** Types of adverse events, 2023–2024 season

Characteristics	Total (A=B+C)	General adverse events (B)	Severe adverse events			No. of vaccinated (D)	Adverse events rate per 100 thousand (E=A/D*10 <sup>5</sup> )	
			Total (C=C1+C2+C3)	Death (C1) <sup>a)</sup>	Suspected anaphylaxis (C2)			Major adverse events (C3) <sup>b)</sup>
Total	176	166	10	4	1	5	11,756,403	1.50
Elderly people	97	89	8	4	0	4	-	-
Pregnant women	38	38	0	0	0	0	-	-
Children	41	39	2	0	1	1	-	-

--not available. (A) Accumulated period: September 20, 2023 to April 30, 2024 (It was calculated based on information reported by medical institutions or public health centers as a suspected adverse event after vaccination, and does not suggest causality between vaccines and adverse events. Report status classification may be changed when new information is added). (B) Common adverse events include common symptoms such as redness, pain, swelling, myalgia, fever, headache, chills after vaccination. (C) Severe adverse event. ① Death, ② Suspected anaphylaxis, ③ Major adverse events: causality assessment for serious AEFI etc. <sup>a)</sup>Death: cardiac arrest (1), etc (3). <sup>b)</sup>Major adverse events: sepsis (2), Guillain-Barre syndrome (1), encephalopathy/encephalitis (1), brachial plexopathy (1).

## Conclusions

The national influenza vaccination program for the 2023–2024 season was available for children aged 6 months to 13 years, pregnant women, and older adults aged 65 and older. Vaccination rates among older adults and pregnant women increased compared with the previous season. In contrast, the vaccination rate among children decreased, which can be attributed to early outbreaks in this demographic during a season when influenza cases reached their highest number in the past five years.

Although there have not been major influenza epidemics since the COVID-19 pandemic, a pattern of seasonal epidemics began during the 2022–2023 season [6]. The percentage of suspected cases during the 2023–2024 season remained high among school-aged children compared with previous seasons. Therefore, it is essential to prepare for the national influenza vaccination program for the 2024–2025 season by enhancing management for safe vaccinations and implementing targeted promotions to encourage influenza vaccination among different populations.

## Declarations

**Ethics Statement:** Not applicable.

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**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Author Contributions:** Conceptualization: SHA, WKL. Data curation: SHA, HWH, MJK, YRK, JYL. Methodology: SHA, HWH, MJK. Supervision: WKL, DWL, YRK. Writing – original draft: SHA, MJK, WKL. Writing – review & editing: SHA, WKL, DWL.

## Supplementary Materials

Supplementary data are available online.

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