INFLUENZA VACCINATION IN JAPAN AMONG THE GENERAL POPULATION AND HIGH-RISK GROUPS
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ABSTRACT
OBJECTIVES: Influenza vaccine rates remain lower in Japan than in the United States. This study investigated current influenza vaccine rates among the Japanese general population and among high-risk adults.

METHODS: The study used data from the 2011 and 2012 Japan National Health and Wellness Survey (NHWS), which are conducted annually. Respondents were interviewed face-to-face and included individuals (≥15 years of age) from an internet panel. Consent to participate was obtained through an internet panel. Data were analyzed using the Stata statistical software package. Chi-square analysis was used to test for differences in vaccination rates among all predictors. A p-value of <0.05 was considered statistically significant.

RESULTS: A total of 25,899 respondents were interviewed in 2011 and 2012, with 13,554 and 12,345 respondents in each year, respectively. The overall vaccination rate in 2011 was 45.30%, and in 2012 it was 45.30%. Vaccination rates were highest for persons aged 45-64 years and lowest for those aged 15-24 years. The main reasons for non-vaccination were: the belief that it was not important (45.30%), fear of needles (25.39%), and unaffordability (22.56%). Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination. There was a moderate increase in vaccination rates among most of the high-risk groups when compared to the general population, including persons with chronic neurological conditions, BMI ≥25, those who regularly consume alcohol, and currently employed. Vaccination rates were significantly higher among those who were currently married with one or more children in the household and those who had a higher income (≥¥5MM). Vaccination rates were significantly lower among those with lower income (<¥5MM), those who were currently not married, and those who were not currently employed. Among high-risk groups, vaccination rates were significantly higher among those who had a higher income, those who were currently employed, and those who were currently married with one or more children in the household. Among high-risk groups, vaccination rates were significantly lower among those who were currently not married and those who were not currently employed.

CONCLUSIONS: Influenza vaccination rates in Japan have been lower than the World Health Organization (WHO) recommended rates. However, vaccination rates among most of the high-risk groups were significantly higher than the general population. Among high-risk groups, vaccination rates were significantly lower among those who were currently not married and those who were not currently employed. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective.

BACKGROUND
Influenza vaccines are important prophylactic and can potentially cause serious complications with high mortality.1,2 Influenza vaccination is the primary method for preventing influenza and its serious complications.3,4 Influenza vaccination rates in Japan have been lower than the World Health Organization (WHO) recommended rates.3,5

OBJECTIVES
The objectives of this study were to examine current influenza vaccination rates among the general Japanese population and rates among high-risk adults.

METHODS
Data Source
Data from the 2011 and 2012 Japan NHWS (N=30,000) National Health and Wellness Survey (NHWS) were used in this analysis. The NHWS is a survey, internet-based health survey of adults (≥15 years) conducted each year. Respondents at all levels are recruited on an internet panel using a random stratified sampling framework to ensure the demographic composition (with respect to age and sex) is similar to that of the adult population of Japan in government-based statistics.

Influenza Scepticism
Survey respondents reported their age, gender, education, income level, marital status, and employment status.

Health Characteristics
Body mass index (BMI), smoking status, exercise behavior, and alcohol consumption were assessed.

High-Risk Groups
The following high-risk groups were created based on self-reported chronic condition status:
- Coronary Heart Disease (CHD): heart failure, angina pectoris, and myocardial infarction
- Chronic Lung Conditions: COPD, chronic bronchitis, emphysema, and asthma
- Chronic Renal Conditions: Kidney disease
- Chronic Liver Conditions: Hepatitis B and Hepatitis C
- Chronic Neurological Conditions: Multiple sclerosis, stroke, Alzheimer’s, Parkinson’s, and ALS
- Immunodeficiencies
- Caregiver: Provide care for an adult relative with Alzheimer’s, multiple sclerosis, cancer, or Parkinson’s

Vaccination History:
Respondents reported whether they received the vaccine in the past year (yes/no) for not receiving the vaccine, and their fear of needles (FrN) if they strongly disagreed to 5=Strongly agree with the statement, “I’m afraid of needles”).

Statistical Analysis
Binary logistic regressions were conducted to predict vaccination behavior from socio-demographic and risk-related variables.

RESULTS
Vaccination rates in Japan have been lower than in the United States and among high-risk adults. Vaccination rates were highest for persons aged 45-64 years and lowest for those aged 15-24 years. The main reasons for non-vaccination were: the belief that it was not important (45.30%), fear of needles (25.39%), and unaffordability (22.56%). Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination. There was a moderate increase in vaccination rates among most of the high-risk groups when compared to the general population, including persons with chronic neurological conditions, BMI ≥25, those who regularly consume alcohol, and currently employed. Vaccination rates were significantly higher among those who were currently married with one or more children in the household and those who had a higher income (≥¥5MM). Vaccination rates were significantly lower among those with lower income (<¥5MM), those who were currently not married, and those who were not currently employed. Among high-risk groups, vaccination rates were significantly higher among those who had a higher income, those who were currently employed, and those who were currently married with one or more children in the household. Among high-risk groups, vaccination rates were significantly lower among those who were currently not married and those who were not currently employed. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective.

CONCLUSIONS
Influenza vaccination rates in Japan have been lower than the World Health Organization (WHO) recommended rates. However, vaccination rates among most of the high-risk groups were significantly higher than the general population. Among high-risk groups, vaccination rates were significantly lower among those who were currently not married and those who were not currently employed. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective. Among respondents with chronic lung conditions, unaffordability was one of the reasons for non-vaccination along with the belief that it was not important and it was not effective.