

Trends in smoking and lung cancer mortality in Japan, by birth cohort, 1949–2010

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Objective To determine smoking trends in Japan in comparison with lung cancer mortality.

Methods Age-specific smoking prevalence among cohorts born between 1897 and 1985 were determined for the period 1949–2010. The percentages of the cohorts born between 1893 and 1979 who initiated smoking early (e.g. before the age of 20 years) were determined. The results were compared against lung cancer mortality rates in people aged 40–84 years belonging to cohorts born between 1868 and 1968.

Findings In males, smoking prevalence was generally high, particularly among those born before the late 1950s, and early initiation was fairly uncommon. Early initiation was most common among recent birth cohorts of males, who showed relatively low prevalences of smoking. In females, the prevalence of smoking was generally low and early initiation was very uncommon, particularly among those born in the late 1930s and before the late 1940s, respectively. Recent cohorts of females showed relatively high prevalences of smoking and relatively high percentages of early initiation. In both sexes, lung cancer mortality was generally low but increased over the study period.

Conclusion Lung cancer mortality in Japanese males was relatively low given the high prevalence of smoking, perhaps because early initiation was fairly uncommon. Over the last four decades, however, early initiation of smoking has become more common in both sexes. The adverse effect this is likely to have on lung cancer mortality rates has probably not been observed because of the long time lag.

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Introduction

Although smoking is known to cause cancer, cardiovascular and respiratory diseases and other health problems,¹ almost one billion men and 250 million women in the world smoke.² Strong evidence of a link between smoking and lung cancer has existed since 1950³ and lung cancer mortality is now sometimes used as a measure of a population's past exposure to smoking.^{4–6} Several developed countries, including the United States of America, have experienced high rates of lung cancer mortality in males, with more than 100 deaths per 100 000 men aged 50–54 years of age.⁷ In Japan, however, this rate of lung cancer mortality is only seen in males in age groups 60–64 or older, even though the prevalence of smoking among Japanese men is high.^{8,9} Among Japanese women, age-standardized lung cancer mortality rates have increased in the absence of any increase in the prevalence of smoking.¹⁰

In general, the probability that you will die of lung cancer at any particular age^{7,11,12} and the probability that you will smoke are affected by when you were born (i.e. the birth cohort to which you belong).^{13–20} Most of those who die from lung cancer are middle-aged or elderly and die many years after they began smoking. The long time lag and differences between birth cohorts make the full impact of smoking on public health difficult to evaluate. Recent observations from the United Kingdom of Great Britain and Northern Ireland have indicated that age at initiation of smoking may have a marked impact on subsequent lung cancer mortality: the highest levels of lung-cancer-related mortality in middle and old age were observed in the birth cohorts in which more than 63% of males had begun smoking before the age of 20 years.²¹ Although the early initiation of smoking has been associated with increased health risks in at least two other cohort studies,^{22,23} the population data needed to explore this

link in detail are often unavailable or, if available, have yet to be appropriately analysed.

An annual, cross-sectional nationwide survey on smoking has been conducted in Japan since 1949 by the Japan Tobacco and Salt Public Corporation (known as Japan Tobacco Incorporated from 1985).^{24,25–28} However, many of the data collected during these surveys – including all of the data collected between 1949 and 1957, the age-specific data collected between 1949 and 1964, and the data on age at initiation of smoking that were collected in the 1958 survey – have never been published or analysed in the medical literature. In this study, age-specific prevalences of smoking and the percentages of people who began smoking early in life (e.g. before the age of 20 years) were evaluated, by birth cohort, using the data previously collected in nationwide surveys in Japan. The results were then related to the corresponding age-specific mortalities from lung cancer.

Methods

Lung cancer mortality

Annual data on lung cancer mortality were extracted from vital statistics collected in Japan between 1950 and 2010.^{7,29} The data were age-standardized using the World Health Organization's world standard population.³⁰ For the present study, 5-year age groups in the range from 40–44 years to 80–84 years were investigated. In describing birth cohorts (in this and all other analyses), the median age for each age group was considered to be the age of all individuals in that age group. For example, all participants aged 80–84 years in 1950 were considered to be members of the 1868 birth cohort. The age-specific data on mortality cover the 1868–1968 birth cohorts.

Smoking prevalence

Each of the nationwide surveys on smoking prevalence that have been conducted annually in Japan since 1949 has fol-

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lowed a stratified, two-stage, random-sampling method and has included approximately 5000–32 000 members of the Japanese population aged ≥ 20 years.^{24,27–30} Younger individuals have not been surveyed because Japan banned smoking by individuals younger than 20 years in 1900. The details of the survey method varied with year but included face-to-face interviews and self-administered questionnaires. The data collected allowed the annual evaluation of the prevalence of smoking from 1949 to 2010, broken down by sex and by 10-year age groups from 20–29 years to 50–59 years.^{9,24,31} The data on smoking prevalence covered the 1897–1985 birth cohorts. Each surveyed individual was simply categorized as a smoker (even if he or she only smoked occasionally) or a non-smoker.

Age at initiation of smoking

Each individual investigated in the 1958 nationwide survey on smoking prevalence (2484 men and 2588 women) was asked at what age he or she had begun smoking. For the present study, other data on age at the initiation of smoking were collected from the questionnaires that were distributed during the National Nutrition Surveys that were run in Japan in 2003 and 2004.^{32–34} Each of these surveys covered approximately 5000 households, in 300 study areas, that were selected by a stratified, two-stage, random-sampling method. In these nutrition surveys, which together included 6320 males and 7108 females, age at initiation of smoking was reported by sex and 10-year age groups ranging from 20–29 years to 60–69 years. The data on age at initiation covered the 1893–1979 birth cohorts. The age of smoking initiation was unknown for 33 (0.6%) of the participants in the 1958 survey and 35 (0.3%) of the participants in the 2003–2004 survey. These 68 individuals were therefore excluded from the final analyses. The proportions of individuals who had initiated smoking by particular ages were calculated (as “cumulative smoking initiation”).

Statistical analysis

For the prevalences of smoking, 3-year moving averages were calculated by age group. Changes with calendar year in both age-standardized lung cancer mortality rates and smoking prevalence were investigated. Changes with age in lung cancer mortality, smoking prevalence

Fig. 1. Age-standardized lung cancer mortality and smoking prevalence, Japan, 1950–2010



and initiation of smoking by certain ages were investigated for the 1925 birth cohort. The 1925 cohort (which, nationally, comprised 3.17 million men and 3.44 million women aged 40–45 years in 1967) was selected for detailed investigation because the corresponding data on both lung cancer mortality at an age of 80–85 years and prevalence of smoking at an age of 20–29 years were available and the relevant – but not exactly corresponding – data on age at initiation of smoking had also been recorded (i.e. the data on those aged 30–39 years at the time of the 1958 survey). Finally, changes with birth year, in lung cancer mortality, smoking prevalence and initiation of smoking by certain ages, were also determined. We calculated 95% confidence intervals (CI) for lung cancer mortality and cumulative smoking initiation.

Similar data previously obtained in the United States were used for reference: the prevalences of cigarette smoking among the 1920–1924 birth cohorts of white men and women, as estimated using retrospective questionnaires,¹³ and lung cancer mortality rates in the 1920–1924 birth cohorts⁷ and in white men who had never smoked.³⁵

Results

Changes with calendar year

For both men and women, age-standardized lung cancer mortality rates increased between 1950 and 1996 and

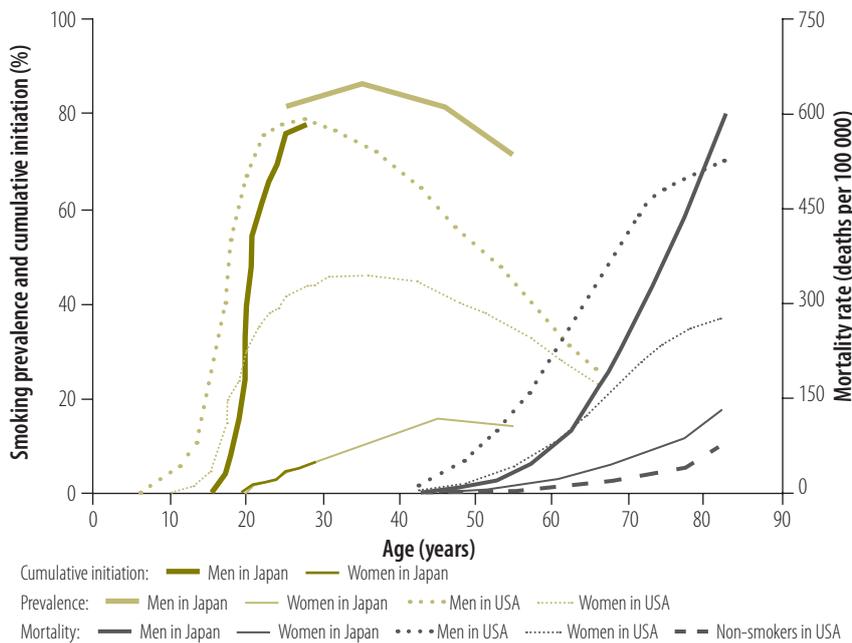
then slightly decreased between 1996 and 2010 (Fig. 1). The prevalence of smoking among men aged ≥ 20 years ranged from 74% to 85% over the three decades from 1949 but then gradually decreased, falling to 37% by 2010. The corresponding prevalences for women ranged between 10% and 20% over the six decades from 1949 and showed no clear trend, up or down, over this period.

The 1925 birth cohort

Among the males of the 1925 cohort, smoking initiation before the age of 20 years was uncommon (reported by 16% of the males; 95% CI: 13–20). Most (60%; 95% CI: 56–64) of the males in this cohort had started smoking when aged 20–25 years, and, once they had started, most of the men had smoked for at least three decades (Fig. 2). The lung cancer mortality rate first reached 100 deaths per 100 000 in males who had reached 60–64 years of age (when 104 deaths per 100 000 were recorded; 95% CI: 100–108), or about 40 years after most of the men had started smoking.

Although few of the females of the 1925 cohort had begun smoking by the age of 30 years – only 0.1% (95% CI: 0.0–0.8) before reaching 20 years of age and only 7% (95% CI: 5–9) by the age of 29 years of age – about 16% of them began to smoke later in life. Among these females, the lung cancer mortality rate only exceeded 100 deaths per 100 000 at an age of 80–84 years of age (when 133 deaths per 100 000 were recorded; 95% CI: 128–137). In contrast, in the United

Fig. 2. **Age-specific lung cancer mortality, smoking prevalence and cumulative smoking initiation (CSI^a) in the 1925 birth cohort, Japan**



^a Percentage of people in the cohort who had started smoking by a certain age.

Note: Age at smoking initiation and smoking prevalence are illustrated by the curves on the left and in the centre of the figure, whereas lung cancer mortality is illustrated by the curves on the right. For reference, the corresponding values for the 1920–1924 birth cohorts in the United States of America⁷¹³ and for lung cancer mortality among white men in the United States who had never smoked³⁵ are also presented.

States, the lung cancer mortality rate among white non-smokers was less than 100 deaths per 100 000, even at 80–84 years of age.³⁵ Compared with their female counterparts, males in the 1925 birth cohort were 12 times more likely to have begun smoking by the time they were 29 years of age, 5 times more likely to be smokers when aged 40–49 or 50–59 years, and 1.2 times and 4 to 5 times more likely to have died from lung cancer when aged 40–44 or when older than 59 years, respectively. When compared against the reference data on men in the United States, Japanese men were less likely to have begun smoking by the age of 20 years, more likely to be smokers and less likely to die from lung cancer in middle-age or when fairly (not very) elderly. When compared against the reference data on women in the United States, Japanese women were less likely to have begun smoking by the age of 20 years, less likely to be smokers and less likely to die from lung cancer in middle age or when elderly. The rise in lung-cancer mortality with increasing age had slowed over the last few decades in the United States but not in Japan.

Changes with birth year among men

In men in each birth cohort, the prevalence of smoking was high but the initiation of smoking before the age of 20 years was relatively uncommon (Fig. 3, Fig. 4, Fig. 5). The prevalence of smoking exceeded 60% in at least one age group within every investigated cohort born before the early 1970s but was lower in more recent birth cohorts. In every birth cohort, fewer than 32% (all 95% CIs between 11% and 35%) of the males began smoking before the age of 20 years and fewer than 3% (all 95% CIs between 0% and 4%) began smoking when they were 14–15 years of age. Although lung cancer mortality among males generally increased over the study period, it was always relatively low given the prevalence of smoking.

The men in the more recent birth cohorts showed relatively low smoking prevalences. However, they were more likely to have begun smoking at a young age (i.e. before the age of 20 years). Within most birth cohorts, particularly the more recent ones investigated, a decrease in the prevalence of smoking was

seen with increasing age, probably owing to the cessation of smoking by some middle-aged men. Smoking initiation before the age of 20 years was reported by no more than 22% (all 95% CIs between 11% and 25%) of the males in the earlier birth cohorts investigated (i.e. those born by the late 1930s) but was reported by about 30% (all 95% CIs between 25% and 35%) of the men born after the mid-1940s. The effects of the recent increases in the percentage of Japanese who initiate smoking early in life remain unclear, since much of the lung cancer mortality that will occur in the more recent birth cohorts studied, especially among the elderly, has not yet occurred.

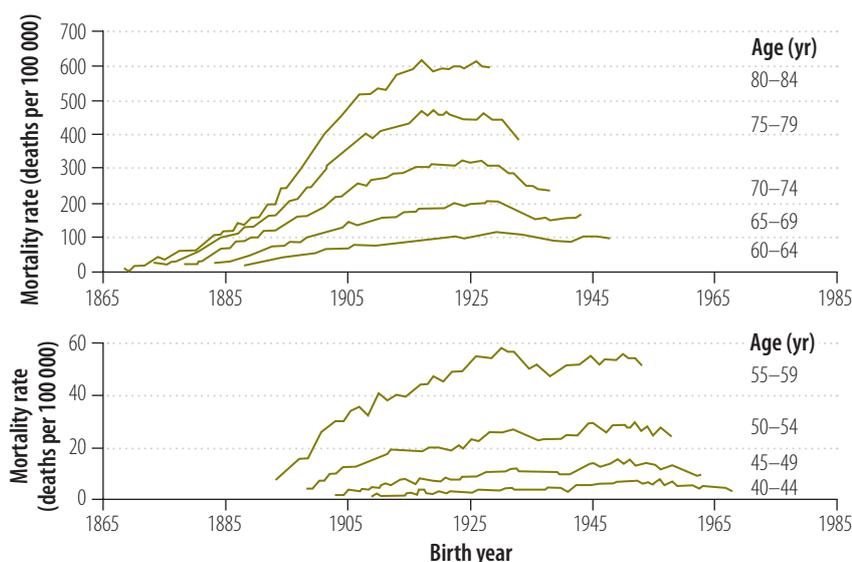
Men born in the late 1930s have shown lower lung cancer mortality rates than men born several years earlier or later. The men born in the late 1930s did have slightly lower smoking prevalences than the men born several years before or after them, were generally older when they began smoking than the males in more recent cohorts, and were more likely to have ceased smoking than the men who were born before them. As indicated in Table 1, complex changes in early initiation, age-specific smoking prevalences and lung cancer mortality rates were noted for selected years and age groups.

Changes with birth year among women

Smoking and the early initiation of smoking were relatively uncommon in females in each birth cohort investigated (Fig. 6, Fig. 7, Fig. 8). The prevalence of smoking was less than 24% among the females in each cohort, and fewer than 12% (all 95% CIs between 0% and 13%) of the females in each cohort reported having started smoking before they were 20 years old. The lung cancer mortality rate among females increased with birth year and exceeded 100 deaths per 100 000 when the cohorts born in the 1910s reached 75–79 years of age.

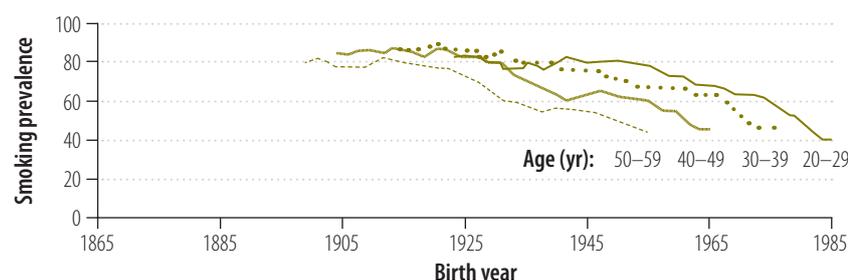
Some differences were seen between birth cohorts. Lung cancer mortality rates among women older than 65 years were relatively high in cohorts born in the late 1910s and early 1920s. These cohorts experienced relatively high prevalences of smoking compared with the cohorts born over the next four decades. Smoking prevalence was especially low (< 15%) among the women

Fig. 3. Lung cancer mortality among males, by birth year, Japan



Note: Mortality is shown for nine age groups covering the middle-aged and elderly.

Fig. 4. Smoking prevalence among males, by birth year, Japan



Note: Smoking prevalence is shown for four age groups.

Fig. 5. Age at smoking initiation among males, by birth year, Japan



Note: Age at smoking initiation is shown as a cumulative percentage, so that each plotted line shows the cumulative smoking initiation, or percentage of the surveyed individuals who had begun smoking by the age indicated.

born in the late 1930s. Although no more than 2% (all 95% CIs between 0% and 5%) of the females born before the late 1940s started smoking before the age of 20 years, this proportion gradually increased to 11% (all 95%

CIs between 9% and 14%) in the most recent birth cohorts investigated. As with male mortality, many of the lung cancer deaths likely to be seen in females in the most recent birth cohorts have yet to occur.

Discussion

Japan is unusual in that national data on smoking prevalence have been collected annually, in a fairly consistent manner, for more than six decades. Such long-term data are essential in attempts to quantify the full health burden linked to smoking, since some of the adverse effects of smoking may take many years to become apparent. Lung cancer, for example, is mostly diagnosed in the middle-aged and elderly, often in individuals who have been smoking for decades.

Data on age-specific smoking prevalence have been collected since about 1950 in several countries,^{5,36} but most of the resultant data sets, with very few exceptions,^{17,20} lack the consistency and specificity needed to define birth cohorts. Although data on smoking in childhood and adolescence are especially sparse, this gap in our knowledge can be filled to some extent by the use of retrospective questionnaires that ask adult respondents to state their age when they first smoked.^{13-16,18-20} However, such questionnaires, which were used in the present study to estimate cumulative smoking initiation, can only be administered to survivors and their accuracy may be limited by recall bias. In Japan, retrospective questionnaires were used in several studies conducted between 1983 and 1994; the data collected in them were recently used to estimate the age-specific smoking prevalence rates among individuals born between 1900 and 1952.¹⁹

The observation that Japanese males tend to begin smoking later in life than males in the United States might explain why Japanese males have lower lung cancer mortality despite having similar or higher prevalences of smoking in adulthood. Japanese males from the 1900-1945 birth cohorts, for example, showed lower lung cancer mortality rates (> 100 deaths per 100 000 were only seen among men aged 60-64 years or older in Japan but were recorded in men 55-59 years of age or younger in the United States),⁷ similar or higher prevalences of smoking (> 78% in Japan but < 80% among white males in the United States)¹³ and rarer initiation of smoking before the age of 20 years (< 30% in Japan but > 50% among white males in the United States).¹³ Smoking among children and adolescents younger than 15 years is extremely rare

Table 1. Changes, with calendar year, in smoking initiation, smoking prevalence and lung-cancer mortality in Japan, 1950–2010^a

Sex and calendar year	Percentage who began smoking before age 20 years (birth cohort)	Percentage of 20- to 29-year-olds who smoked (birth cohort)	Percentage of 50- to 59-year-olds who smoked (birth cohort)	Lung cancer mortality ^a (birth cohort) among people aged:	
				50–54 years	80–84 years
Male					
1950	–	82 (1925)	–	5 (1898)	8 (1868)
1960	50 (1939)	80 (1935)	78 (1905)	16 (1908)	62 (1878)
1970	62 (1949)	79 (1945)	79 (1915)	20 (1918)	127 (1888)
1980	64 (1959)	78 (1955)	71 (1925)	26 (1928)	321 (1898)
1990	62 (1969)	67 (1965)	57 (1935)	23 (1938)	515 (1908)
2000	56 (1979)	59 (1975)	54 (1945)	28 (1948)	596 (1918)
2010	–	39 (1985)	44 (1955)	24 (1958)	596 (1928)
Female					
1950	–	4 (1925)	–	3 (1898)	3 (1868)
1960	2 (1939)	5 (1935)	21 (1905)	6 (1908)	20 (1878)
1970	7 (1949)	10 (1945)	21 (1915)	8 (1918)	48 (1888)
1980	13 (1959)	17 (1955)	14 (1925)	10 (1928)	90 (1898)
1990	20 (1969)	18 (1965)	11 (1935)	10 (1938)	120 (1908)
2000	22 (1979)	23 (1975)	13 (1945)	13 (1948)	145 (1918)
2010	–	16 (1985)	14 (1955)	9 (1958)	134 (1928)

^a Deaths per 100 000.

in Japan (Fig. 3, Fig. 4, Fig. 5) but has been relatively common (>10%) within the white male population of the United States for several decades¹³ and is even more common (>20%) in some other countries.³⁶ Individuals who begin to smoke before the age of 15 years appear to be at greatly increased risk of developing smoking-related illness.^{22,23}

Since duration of smoking is functionally related to age at initiation, the separate effects of these two variables on health are unclear and difficult to distinguish. Furthermore, inter-individual variation in age at smoking initiation tends to be small within a birth cohort. This makes statistical power low and comparisons within a birth cohort difficult. If, however, age at smoking initiation differs substantially between birth cohorts, comparisons based on aggregated data that have been collected in a consistent manner can be informative.³⁷ More comprehensive comparisons of the initiation of smoking by certain ages, smoking prevalence and lung cancer mortality among birth cohorts, both within and between countries, are needed.

When analysed by birth year, the females of the present study showed a decreasing trend in the prevalence of smoking that was gradually replaced by an increasing trend (Fig. 6, Fig. 7, Fig. 8). The peaks in lung cancer mortality seen among the females born

in about 1920 are associated with a relatively high prevalence of smoking in this birth cohort (compared with the values recorded for more recent cohorts) and provide support for a causal link. The increases seen over time in age-standardized lung cancer mortality rates may reflect changes, with birth year, in the prevalence of smoking – or in the initiation of smoking by certain ages – that existed many years ago and may therefore conflict with recent trends in the overall prevalence of smoking (Fig. 1). A four-stage model of cigarette consumption and subsequent mortality among men and women has been proposed and widely used.^{5,12,38} The model includes a three- to four-decade lag between a rise in the prevalence of smoking and a rise in smoking-attributable mortality.

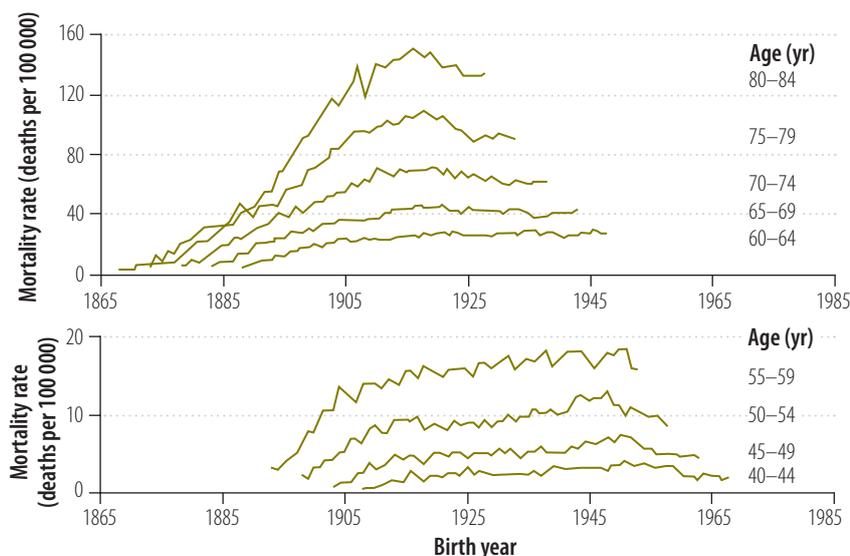
Among the males of the present study, lung cancer mortality was relatively low in the cohorts born in the late 1930s, possibly as the combined result of a relatively low smoking prevalence, relatively late smoking initiation, and smoking cessation. This may explain the slight decrease recently seen in age-standardized lung cancer mortality (Fig. 1). Males in the cohorts born after the 1930s are less likely to smoke in adulthood than the males born in the 1920s but are more likely to have begun smoking before they reached 20 years of age.

The full effects of these differences on mortality are currently unclear because the surviving males who were born after the 1930s have yet to become “elderly”. A repeated annual survey would be useful for monitoring long-term gradual changes in the prevalence of smoking by birth cohort.^{39,40} Although prospective cohort studies allow individual-level inferences rather than the population-level inferences discussed here, it is often difficult to follow representative samples for long periods.

Legislation, cigarette shortages and social norms may explain some of the present findings. The Japanese government banned smoking by minors in 1900 and cigarettes were rationed in Japan around the time of the Second World War. After 1949, women were targeted in advertising produced by the Japan Tobacco and Salt Public Corporation. In 1985, the Japanese market was opened to foreign manufacturers of cigarettes and the sales competition increased. These events may have accelerated the adoption of smoking by adolescents and young women in Japan.

The transitions seen in Japan may have some features in common with those occurring in countries nearby. In China, the prevalence of smoking among women has remained below 5% – and much lower than the corresponding value for men – for several decades.³⁸

Fig. 6. Lung cancer mortality among females, by birth year, Japan



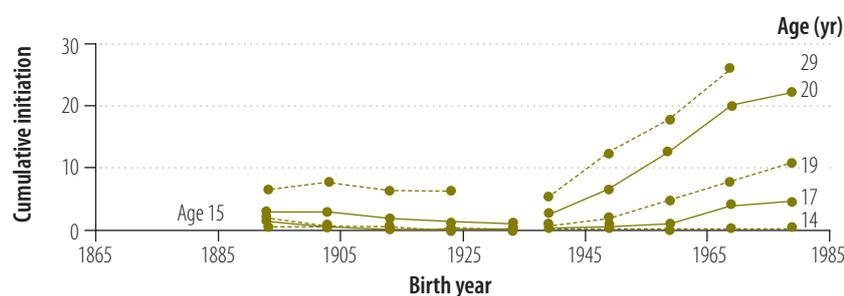
Note: Mortality is shown for nine age groups covering the middle-aged and elderly.

Fig. 7. Smoking prevalence among females, by birth year, Japan



Note: Smoking prevalence is shown for four age groups.

Fig. 8. Age at smoking initiation among females, by birth year, Japan



Note: Age at smoking initiation is shown as a cumulative percentage, so that each plotted line shows the cumulative smoking initiation, or percentage of the surveyed individuals who had begun smoking by the age indicated.

Smoking was a very rare habit among young Chinese women but relatively common among elderly women.⁴¹ The mean age at smoking initiation, which, for the 1927–1946 birth cohorts, was recorded as being above 20 years for males and above 25 years for females, has been falling in China.⁴¹ In a study conducted in the Republic of Korea in the 1980s, the prevalence of smoking among females was also generally low but relatively high among the elderly.⁴² In the same country, female lung cancer mortality rates appeared to be highest in the cohort born in the 1920s.⁷

In summary, lung cancer mortality has increased in Japanese men and women. However, the lung cancer mortality rates in Japanese men remain surprisingly low given the high prevalence of smoking, perhaps because Japanese males rarely begin to smoke early in life. Unfortunately, age at initiation of smoking has been decreasing in both sexes in Japan for the last four decades. Since lung cancer is generally observed in the middle-aged or elderly, the full impact of this worrying trend on lung cancer mortality has yet to be observed. ■

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ملخص

اتجاهات التدخين والوفيات الناجمة عن سرطان الرئة في اليابان، بحسب مجموع المواليد، في الفترة من 1949 إلى 2010 شائع إلى درجة كبيرة، ولا سيما بين مواليد أواخر ثلاثينيات القرن العشرين وما قبل أواخر أربعينيات القرن العشرين، على التوالي. وأظهرت مجموعات الإناث الحديثة ارتفاعاً نسبياً في معدلات انتشار التدخين وارتفاعاً نسبياً في النسب المئوية لحالات الشروع في التدخين في سن مبكرة. وكانت الوفيات الناجمة عن سرطان الرئة في كلا الجنسين منخفضة بشكل عام إلا أنها ازدادت على مدار فترة الدراسة.

الاستنتاج كانت الوفيات الناجمة عن سرطان الرئة في الذكور في اليابان منخفضة نسبياً بالنظر لارتفاع معدل انتشار التدخين الذي قد يرجع إلى عدم شيوع الشروع في التدخين في سن مبكرة إلى حد ما. إلا أنه على مدار الأربعة عقود الأخيرة، أصبح الشروع في التدخين في سن مبكرة أكثر شيوعاً في كلا الجنسين. ولم تتم ملاحظة الأثر الضار الذي يرجح حدوثه نتيجة الشروع في التدخين في سن مبكرة على معدلات الوفيات الناجمة عن سرطان الرئة نظراً لطول الفترة الزمنية الفاصلة بين التعرض وظهور المرض.

الغرض تحديد اتجاهات التدخين في اليابان بالمقارنة بالوفيات الناجمة عن سرطان الرئة.

الطريقة تم تحديد معدلات انتشار التدخين في الفئات العمرية المحددة بين مجموع المواليد من 1897 إلى 1985 للفترة من 1949 إلى 2010. وتم تحديد النسب المئوية لمجموع المواليد من 1893 إلى 1979 التي بدأت التدخين في سن مبكرة (أي قبل سن 20 سنة). وتم مقارنة النتائج بمعدلات الوفيات الناجمة عن سرطان الرئة لدى الأشخاص الذين تراوحت أعمارهم بين 40 إلى 84 سنة الذين ينتمون إلى مجموع المواليد من 1868 إلى 1968.

النتائج كان معدل انتشار التدخين لدى الذكور مرتفعاً بشكل عام، ولا سيما بين من ولدوا قبل أواخر خمسينيات القرن العشرين، وكان الشروع في التدخين في سن مبكرة غير شائع إلى حد ما. وكان الشروع في التدخين في سن مبكرة أكثر شيوعاً بين مجموع المواليد من الذكور التي ولدت مؤخراً، والتي أظهرت انخفاضاً نسبياً في معدلات انتشار التدخين. وكان معدل انتشار التدخين لدى الإناث منخفضاً بشكل عام وكان الشروع في التدخين في سن مبكرة غير

摘要

日本1949 - 2010年吸烟与肺癌死亡率趋势出生队列研究

目的 比较肺癌死亡率,确定日本的吸烟趋势。

方法 确定1949至2010年期间在1897至1985年间出生的出生队列中特定年龄人群的吸烟率。确定1893至1979年间出生并且早期开始吸烟(例如,20岁之前)的出生队列的百分比。将结果与1868至1968年间出生、年龄在40-84岁的出生队列的肺癌死亡率进行比较。

结果 在男性中,吸烟率普遍较高,出生在20世纪50年代末之前的男性尤为如此,而早期开始吸烟的情况则相当少见。最近出生的男性群体中早期开始吸烟的情况最为常见,他们表现出相对较低的吸烟率。在女性中,吸烟率普遍较低,早期

开始吸烟的情况非常罕见,尤其是出生在20世纪30年代末和20世纪40年代末之前的女性。最近出生的女性表现出相对较高的吸烟率和相对高比例的早期开始吸烟情况。在两性中,肺癌死亡率一般较低,但是在研究期间有所增加。

结论 日本男性吸烟率高,而肺癌死亡率相对较低,这可能是由于早期开始吸烟的情况相当罕见。然而,在过去的四十年中,早期开始吸烟的情况在两性当中变得更加普遍。由于开始吸烟和之间存在较长的滞后期,可能未观察到这种情况对肺癌死亡率可能带来的负面影响。

Résumé

Tendances du tabagisme et de la mortalité du cancer du poumon au Japon, par cohorte de naissance, 1949-2010

Objectif Déterminer les tendances du tabagisme au Japon comparées à la mortalité par cancer du poumon.

Méthodes Les taux de prévalence du tabagisme en fonction de l'âge, parmi les cohortes nées entre 1897 et 1985, ont été déterminés pour la période 1949-2010. Les pourcentages des cohortes nées entre 1893 et 1979, ayant commencé à fumer de manière précoce (par exemple avant l'âge de 20 ans), ont été déterminés. Les résultats ont été comparés aux taux de mortalité par cancer du poumon chez les personnes âgées de 40 à 84 ans, appartenant aux cohortes nées entre 1868 et 1968.

Résultats Chez les hommes, la prévalence du tabagisme était généralement élevée, en particulier parmi les personnes nées avant les années 1950, et l'initiation précoce était assez peu fréquente. L'initiation précoce était plus fréquente parmi les cohortes de naissances d'hommes, montrant des prévalences relativement faibles de tabagisme. Chez les femmes, la prévalence du tabagisme était généralement

faible, et l'initiation précoce très peu fréquente, en particulier chez les personnes nées dans les années 1930 et avant les années 1940, respectivement. Les cohortes récentes de femmes ont montré des prévalences relativement élevées de tabagisme et des pourcentages relativement élevés d'initiation précoce. Pour les deux sexes, la mortalité par cancer du poumon était généralement faible, mais elle a augmenté au cours de la période étudiée.

Conclusion La mortalité par cancer du poumon chez les hommes japonais était relativement faible compte tenu de la forte prévalence du tabagisme, peut-être parce que l'initiation précoce était assez rare. Au cours des quatre dernières décennies cependant, l'initiation précoce du tabagisme s'est davantage répandue chez les deux sexes. L'effet négatif que cela peut avoir sur les taux de mortalité par cancer du poumon n'a pas été observé, probablement en raison du décalage.

Резюме**Тенденции смертности от курения и рака легких в Японии, по когортам рождаемости, 1949-2010 гг.**

Цель Исследовать тенденции курения в Японии в сравнении с уровнем смертности от рака легких.

Методы Были определены средние уровни распространенности курения среди когорт детей, родившихся между 1897 и 1985 гг., в период с 1949 по 2010 годы. Рассчитаны проценты от когорт, родившихся между 1893 и 1979 гг., начавших курение рано (т.е. в возрасте до 20 лет). Затем было проведено сравнение этих результатов с уровнем смертности от рака легких среди людей в возрасте 40-84 лет, принадлежащих к когортам родившихся с 1868 по 1968 годы.

Результаты У мужчин распространенность курения в целом была высокой, особенно среди тех, кто родился до конца 1950-х годов, однако раннее начало курения было не очень распространено. Раннее начало курения было наиболее распространено среди последних когорт мужчин, которые показали относительно низкую распространенность курения.

У женщин распространенность курения в целом была низкой, и раннее начало было очень редким, особенно среди тех, кто родился с конца 1930-х до конца 1940-х годов. Последние когорты женщин имели относительно высокие показатели распространенности курения и относительно высокий процент раннего начала. Среди обоих полов смертность от рака легких в целом была низкой, но увеличилась за период исследования.

Вывод Смертность от рака легких у японских мужчин была относительно низкой, учитывая высокую распространенность курения, возможно, из-за того, что раннее начало курения встречалось довольно редко. Однако за последние четыре десятилетия раннее начало курения стало более распространенным явлением у обоих полов. Вероятно, неблагоприятное воздействие курения на уровень смертности от рака не наблюдалось из-за большого временного разрыва между началом курения и началом самого заболевания.

Resumen**Prevalencias del tabaquismo y mortalidad por cáncer de pulmón en Japón por cohorte de nacimiento, 1949-2010**

Objetivo Conocer las prevalencias del tabaquismo en Japón respecto a la mortalidad por cáncer de pulmón.

Métodos Se determinaron los índices de prevalencia del tabaquismo por edad entre cohortes nacidas entre 1897 y 1985 para el periodo 1949-2010. Se establecieron los porcentajes de las cohortes nacidas entre 1893 y 1979 que iniciaron el consumo de tabaco a edad temprana (por ejemplo, antes de los 20 años de edad). Se contrastaron los resultados con los índices de mortalidad por cáncer de pulmón en personas entre los 40 y 84 años de edad que pertenecían a cohortes nacidas entre 1868 y 1968.

Resultados En varones, el índice de prevalencia del tabaquismo resultó ser generalmente alto, particularmente entre aquellos nacidos antes del final de la década de 1950; asimismo, la iniciación temprana fue inusual. Esta resultó ser más común entre las cohortes de nacimiento varones recientes, quienes mostraron una prevalencia del tabaquismo relativamente baja. En mujeres, el índice de prevalencia del tabaquismo

resultó ser generalmente bajo y la iniciación temprana fue muy poco común, en particular entre aquellas nacidas a finales de la década de 1930 y antes de finales de la década de 1940, respectivamente. Las cohortes de mujeres recientes mostraron una prevalencia del tabaquismo relativamente alta, así como porcentajes de iniciación temprana relativamente altos. En ambos sexos, la mortalidad por cáncer de pulmón resultó ser generalmente baja, aunque incrementó a lo largo del periodo de estudio.

Conclusión La mortalidad por cáncer de pulmón en varones japoneses fue relativamente baja, si se compara con la alta prevalencia del tabaquismo. Quizá esto se deba a que la iniciación temprana fue poco común. No obstante, en las últimas cuatro décadas la iniciación temprana al tabaquismo es más común en ambos sexos. Posiblemente, no se ha observado el efecto adverso que esto pueda tener sobre los índices de mortalidad por cáncer de pulmón debido al gran lapso temporal.

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