

Short report

Clinical epidemiology on smoking in Japanese lower limb amputation

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Abstract

This study reports the results of a smoking survey on lower leg amputees'. The aim of the survey was to obtain basic data for their health management. Results with these amputees were compared to smoking habits of normal employees at a large business establishment, to area residents who underwent the resident health checkups (health checkup subsidized by local jurisdictions), and the results gathered by the National Health and Nutrition Survey. The results indicated that the lower leg amputee group had higher smoking rates among men under the age of 60 when compared to other groups. A trend similar to men's was found among women; their smoking rates in each age category were higher than those in the National Nutrition Survey. An over 15% difference was found of amputee smoking rate when compared to that of employees of the large business establishment. The result of this study, a higher smoking rate among lower leg amputees, suggests a necessity of non-smoking education to promote the improvement of these persons' lifestyles.

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«**Key words**» lower leg amputees, smoking, lifestyles

I. Introduction

Since the effects of tobacco on health were pointed out by epidemiological studies of the 1950s, much research has been done in the United States and Great Britain as well as by the World Health Organization (WHO). Tobacco smoke contains over 4,000 chemicals known to date, of which over 60 are carcinogens or cancer promoters such as benzopyrene. Given the nature of tobacco smoke, the acute effects of smoking habit on the circulatory system are recognized¹⁾. Additional recognized

hazards to smokers include: firstly, lung cancer, followed by other types of cancer, ischemic heart disease, obstructive lung disease, and digestive system diseases such as ulcers of the stomach and duodenum. Moreover, there are the effects of passive smoking habit²⁾. Given this situation, a variety of measures have recently promoted in various countries whose aim is to reduce negative tobacco effects, to enhance health education, to regulate advertisement, to discourage youth from smoking habit, and other steps toward reduced smoking

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habit³⁾.

We have also been doing research on extremity amputees, in particular lower leg amputees, from a variety of angles, one example directed at the cause of amputation. The research aims at improvement of amputees' Quality of Life (QOL). Research surveys in Japan, be they taken from medical viewpoint to the physically handicapped, or from the social point of view, such as lifestyle, are extremely difficult to do. Consequently, reports addressed to amputees are rare. At present, there has been no national epidemiological survey on the topic.

The social climate for lower extremity amputation has in recent years greatly changed. Amputations due to traumatic causes, e.g., workmen's accidents, have decreased in number, while amputations due to circulation disorders, caused by diabetes etc., have increased among the aged. For this reason, to implement their comprehensive rehabilitation, understanding of amputees' lifestyles is important⁴⁾.

This study reports the results of a smoking habit survey on lower leg amputees'. The aim of the survey was to obtain basic data for their health management. Results with these amputees were compared to smoking habit habits of normal employees at a large business establishment, to area residents who underwent the resident health checkups (health checkup subsidized by local jurisdictions), and the results gathered by the National Health and Nutrition Survey.

II. Method and Subjects

1. Lower extremity amputees

All of Osaka Prefecture was designated as the area where the survey was to be conducted. The subjects were leg amputees for whom artificial limbs had been fitted financed by various insurance policies, such as Workmen's

Compensation, Welfare Pension Insurance, and the National Health Insurance.

Persons targeted in this survey were lower extremity amputees (3,138) with order-made prostheses, the costs of which were covered by a variety of types of insurance. The prostheses were produced by a manufacturer in Osaka Prefecture. The number of effective survey responses was 1,450 (45.5%). The method of survey was by way of a mailed questionnaire. Multiple choice questionnaires were mailed to the residence of each person to be surveyed. Completed responses were mailed back in return envelopes. Deputies were asked to respond on behalf of old or underage persons who were unable to answer themselves.

Among males, occupational accidents were the most frequently cited cause (33.7% of all subjects), followed by traffic accidents, diabetes mellitus, and war injuries. For females, traffic accidents topped the list (30.9%), followed by tumor, diabetes mellitus, and unspecified illnesses. The outstanding differences between men and women were the high incidence of work-related accidents and war injuries cited by the males.

2. Employees of large business establishment

The targeted employees at such a business establishment (2,105) worked at a chemical plant in Osaka Prefecture. The number of effective responses was 1,903 (90.4%). The smoking habit survey questionnaire was distributed in advance in 1997, and collected later at the time of general health checkup.

3. Local residents who underwent the resident health checkup

Residents who underwent the resident health checkup in 2000 lived in Habikino City, Osaka Prefecture. Their number was 12,062. Presence/absence of smoking habit was surveyed by questionnaire at the time of the health

checkup.

4. Results of the National Health and Nutrition Survey

Results were extracted from the year 2000 National Nutrition Survey.

III. Results and Discussion

Fig. 1 showed male smoking habit rates by age in groups of: lower leg amputees (age category; 20-29years (61.8%, N=34), 30-39years (70.0%, N=60), 40-49years (73.5%, N=102), 50-59years (60.9%, N=233), 60-69years (48.1%, N=324), 70-79years (41.0%, N=261), 80-89years (41.1%, N=73); employees of a large business establishment; local residents who underwent the resident health checkup, and data from the National Health and Nutrition Survey. Smoking habit rates were higher in the lower leg amputee group than in other groups within the age brackets 20-29, 30-39, 40-49, and 50-59. The highest rate was found with lower leg amputees aged 40-49. Differences in smoking

habit rate among four types of participants decreased in the age category 60 years or older.

Fig. 2 showed the female smoking habit rate. The maximum smoking habit rate was found in the lower leg amputee group (age category; 20-29years (38.5%, N=13), 30-39years (18.2%, N=22), 40-49years (22.9%, N=48), 50-59years (12.5%, N=64), 60-69years (20.5%, N=78), 70-79years (13.3%, N=60), a similar result as with men. The highest rate was found with lower leg amputees aged 20-29.

Obviously, smoking habit increases the risk of incurring lung cancer, ischemic heart disease, etc. Non-smoking habit education is being promoted in Japan too. In this atmosphere, the authors are studying the health management of lower leg amputees from the standpoint of comprehensive rehabilitation implementation⁵⁾.

The current study surveyed the smoking habit rates of lower leg amputees in comparison with those in three other groups. The re-

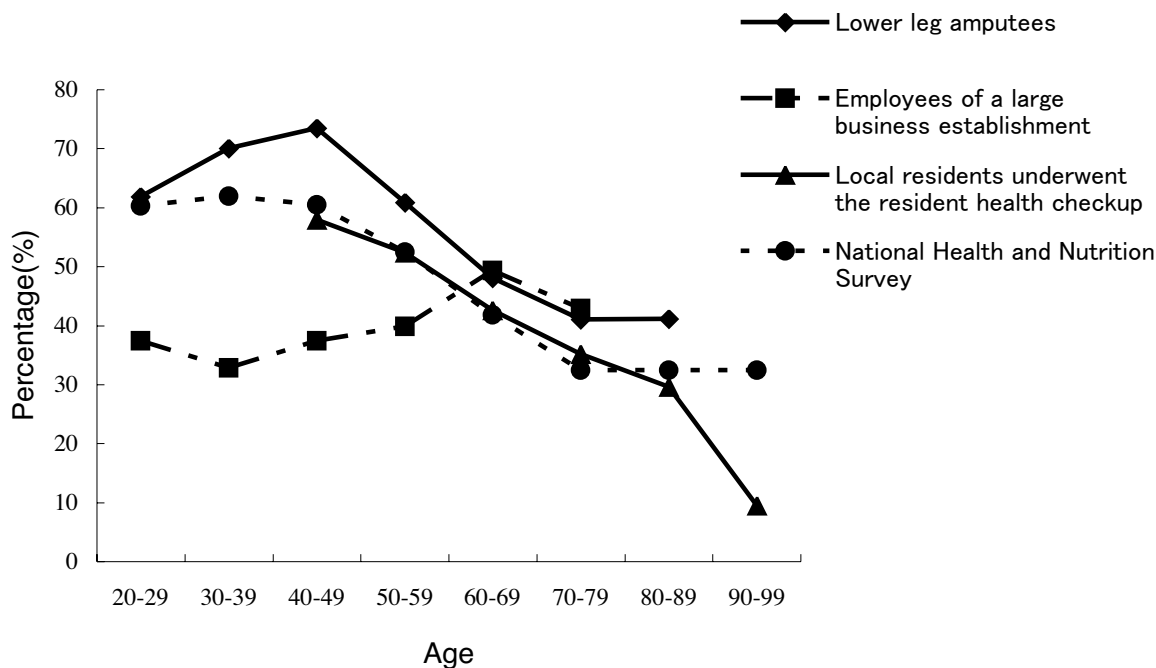


Fig. 1 Male smoking rates by age

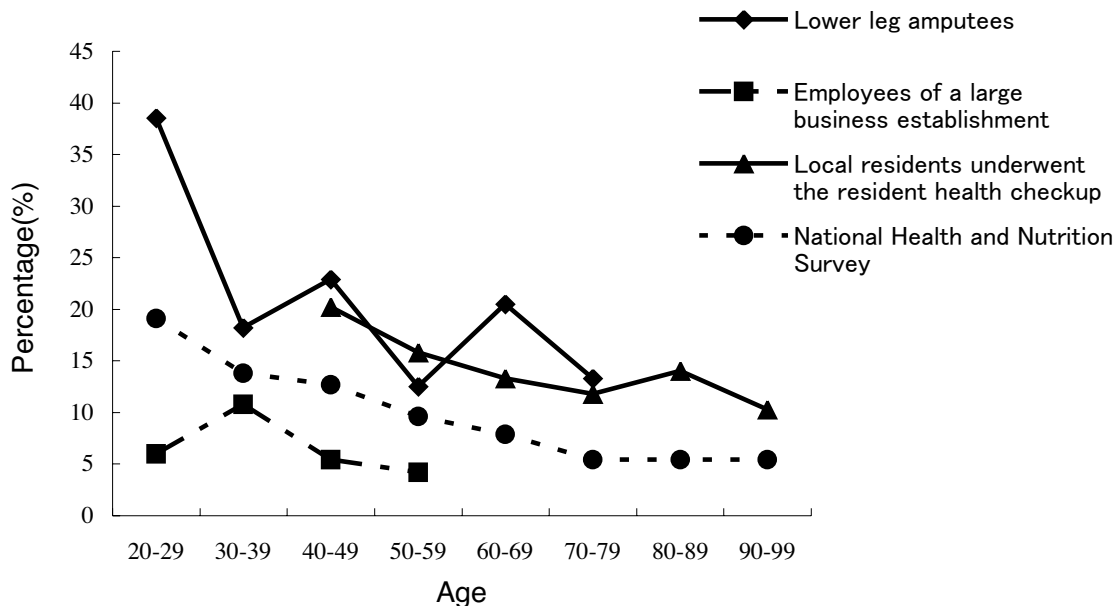


Fig. 2 Female smoking rates by age

sults indicated that the lower leg amputee group had higher smoking habit rates among men under the age of 60 when compared to other groups. Every age category in the lower leg amputee group had higher smoking habit rates compared to those found by the nationwide National Nutrition Survey administered by the Ministry of Health, Labor and Welfare. A similar tendency was found with comparisons to the group of participants of the resident health checkup in Habikino City. An over 20% difference was found in relation to the smoking habit rate among employees of the large business establishment where health education was vigorously carried out. A trend similar to men's was found among women; their smoking habit rates in each age category were higher than those in the National Nutrition Survey. An over 15% difference was found of amputee smoking habit rate when compared to that of employees of the large business establishment.

The authors have been investigating various

aspects of the lives and habits of lower leg amputees with the aim of improving their QOL. The result of this study, a higher smoking habit rate among lower leg amputees, suggests a necessity of non-smoking habit education to promote the improvement of these persons' lifestyles⁶⁾.

References

- 1) Roberts DL: Nature Tobacco flavor. *Recent Adv Tobacco Sci* 14: 49-81, 1988
- 2) Akiba S: Analysis of cause risk related to longitudinal on smoking habits. *Environ Health Perspect Suppl* 8: 15-20, 1994
- 3) Rose G, Colwell L, et al: Randomised controlled trial of anti-smoking advise: final (20 year) results *J Epidemiol Community Health* 46: 75-77, 1992
- 4) Hayashi Y, Imaki M, et al: Epidemiological Study on Reason for Leg Amputation in Japanese. *J Rehabil Health Sci* 4: 1-9, 2006
- 5) Ephraim PL, Dillingham TR, et al: Epidemiology of limb loss and congenital

limb deficiency: A review of the literature.
Arch Phys Med Rehabil 84: 747-761, 2003
6) Peg CWB, Tan SG: Perioperative and reha-

bilitation outcomes after amputation for
ischemic leg gangrene. Ann Acad Med
Singapore 29: 168-172, 2000

要約

下肢切断者の健康管理を行うための基礎資料を得ることを目的に、彼らの喫煙の状況を調査し、健康な大規模事業所従業員、住民基本検診を受診した地域住民および国民健康・栄養調査成績と比較検討した。その結果、喫煙率は男性の60歳未満においては、下肢切断者が他の集団に比べて高値を示していた。女性においても、男性と同様な傾向を示し、各年代とも国民栄養調査成績に比べて高値を示した。さらに、大規模事業所従業員と比較すると約15%以上の差異が示された。下肢切断者は、喫煙率が高レベルであり、生活習慣予防の観点から、禁煙教育の推進が不可欠であることが示唆された。

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