Skin Typing, Sun Exposure, and Sunscreen Use in a Population of Japanese Females Using an Online Interview

Akira KAWADA*,1, Haruyo SASAYA1, Ayaka HIRAO1, Tamae WADA1, Naoki OISO1, Kana ISHIHARA2

(Accepted: January 26, 2011)

Abstract

The purpose of this study was to investigate sun exposure, sunscreen use and the relationship between photo-aging and sun exposure in a population of Japanese females. An online interview was performed at October 19th and 20th in 2009. Five hundred and fourteen females participated in this study. The largest number of subjects belonged to Japanese skin type class J-II (53%), J-I was second (31%), and J-III was third (16%). Fifty-seven and 45% of subjects had remarkable freckles and wrinkles, respectively. A group with much and moderate sun exposure had remarkable freckles significantly more than a group with minimum and little sun exposure (p<0.01). Past history of sun exposure had no significant relation to presence of remarkable wrinkles. Twelve percent and 42% of those studied had occupational and recreational sun exposure, respectively. Eighty-one percent of those had habitual sun exposure. Sunscreens and cosmetics containing sunscreen agents were used by 86% and 65% of the subjects, respectively. Eighty-seven knew sun protection factor (SPF), but only 14% of them (12% of the total subjects) had accurate understanding the definition of SPF. Seventy-four percent knew protection grade of UVA (PA), but only 9% of them (7% of the total subjects) understood the definition of PA. This study demonstrated defects in the correct knowledge of SPF and PA and a relationship between freckles and sun-exposure history. Education in the appropriate use of sunscreens and the significance of SPF and PA is needed.

Key words: sun exposure, sunscreen use, photoaging, skin phototype.

1. Introduction

Ultraviolet (UV) light from sun exposure induces various harmful effects, e.g. sunburn, suntan, photoaging, and cancers on the skin. In order to prevent these harmful effects, daily protection against UV is recommended. Therefore, it is important especially for children and adults to know UV's effects on the skin. Recently most sunscreens provide broad-spectrum UV-protection. Sun protection factor (SPF) implies the ability of UVB protection of sunscreens. For UVA, Japan Cosmetic Industrial Association proposed a labeling system of protection grade of UVA (PA) using immediate tanning as a measure.1) The European Commission has also recommended the in vivo persistent pigment darkening (PPD) method.2) In 2007, Food and Drug Administration has proposed a 4-star grading of UVA protection.3) For appropriate use of sunscreens, correct knowledge of SPF and PA is needed.

The first aim of this study was to reveal the relationship between past history of sun exposure and photoaging signs. Then we have investigated recent trends of sun exposure, freckles and wrinkles as photoaging symptoms, and skin phototype in a population of Japanese females. Previous studies4, 5) in Japan indicated trends of lack in knowledge of SPF and PA. The second aim was to elucidate the present condition of sunscreen use and knowledge for SPF and PA.

2. Subjects and Methods

The study was carried out at October 19th and 20th in 2009. Japanese females, aged 20 to 69 years, were asked to participate. They were given an online questionnaire consisting of multiple-choice and fill-in questions. By obtaining the history of each person’s cutaneous response to first sun exposure, about 1 hr at the beginning of the summer, skin phototype was determined by the following Japanese skin type (JST) classification 4): J-I burn easily and tan minimally; J-II burn moderately and tan moderately; and J-III burn slightly and tan markedly. A modified questionnaire based on that of Kawada4, 5) was designed to assess patterns of sun exposure, as well as patients’ knowledge and use of sunscreens.

To investigate the symptoms of photoaging skin, subjects were asked whether they had remarkable signs of freckles and wrinkles that were defined as two or more freckles and wrinkles on the face. Past history of sun exposure and smoking were asked. Subjects were asked whether they had