Comportements et soleil
–
ce que nous ont appris les SU.VI.MAXiens

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Étude SU.VI.MAX.

Justification

Vitamines et oligo-éléments anti-oxydants prescrits à des adultes à *doses nutritionnelles*
(1 à 3 fois la dose journalière alimentaire recommandée)

Vitamines		Minéraux	
Vitamine C	120 mg	Sélénium	100 µg
Vitamine E	30 mg	Zinc	20 mg
ß Carotène	6 mg		

↘ incidence des cancers
↘ incidence des maladies cardiovasculaires

Cohorte suivie de 1994 à 2002 -> 2007

Schéma expérimental

13 017 sujets

randomisation

antioxydants

placebo

6 mg bêta-carotène
120 mg vit C
30 mg vit E, 20 mg zinc
1 µg sélénium/j

1994-2002

- ***décès***
- ***cancers***
- ***maladies cardio-ischémiques***

nombre de cas ?

nombre de cas ?

SU·VI·MAX

S. Hercberg, *et al*, S. The SU.VI.MAX Study: a randomized, placebo-controlled trial of the health effects of antioxidant vitamins and minerals. Arch Intern Med. 2004;164:2335-2342.

ORIGINAL INVESTIGATION

The SU.VI.MAX Study

A Randomized, Placebo-Controlled Trial of the Health Effects of Antioxidant Vitamins and Minerals

Serge Hercberg, MD, PhD; Pilar Galan, MD, PhD; Paul Preziosi, MD; Sandrine Bertrais, PhD; Louise Mennen, PhD; Denis Malvy, MD, PhD; Anne-Marie Roussel, PhD; Alain Favier, PhD; Serge Briançon, MD

Background: It has been suggested that a low dietary intake of antioxidant vitamins and minerals increases the incidence rate of cardiovascular disease and cancer. To date, however, the published results of randomized, placebo-controlled trials of supplements containing antioxidant nutrients have not provided clear evidence of a beneficial effect. We tested the efficacy of nutritional doses of supplementation with a combination of antioxidant vitamins and minerals in reducing the incidence of cancer and ischemic cardiovascular disease in the general population.

Methods: The Supplémentation en Vitamines et Minéraux Antioxydants (SU.VI.MAX) study is a randomized, double-blind, placebo-controlled primary prevention trial. A total of 13 017 French adults (7876 women aged 35-60 years and 5141 men aged 45-60 years) were included. All participants took a single daily capsule of a combination of 120 mg of ascorbic acid, 30 mg of vitamin E, 6 mg of beta carotene, 100 µg of selenium, and 20 mg of zinc, or a placebo. Median follow-up time was 7.5 years.

Results: No major differences were detected between the groups in total cancer incidence (267 [4.1%] for the study group vs 295 [4.5%] for the placebo group), ischemic cardiovascular disease incidence (134 [2.1%] vs 137 [2.1%]), or all-cause mortality (76 [1.2%] vs 98 [1.5%]). However, a significant interaction between sex and group effects on cancer incidence was found ($P=.004$). Sex-stratified analysis showed a protective effect of antioxidants in men (relative risk, 0.69 [95% confidence interval {CI}, 0.53-0.91]) but not in women (relative risk, 1.04 [95% CI, 0.85-1.29]). A similar trend was observed for all-cause mortality (relative risk, 0.63 [95% CI, 0.42-0.93] in men vs 1.03 [95% CI, 0.64-1.63] in women; $P=.11$ for interaction).

Conclusions: After 7.5 years, low-dose antioxidant supplementation lowered total cancer incidence and all-cause mortality in men but not in women. Supplementation may be effective in men only because of their lower baseline status of certain antioxidants, especially of beta carotene.

Arch Intern Med. 2004;164:2335-2342

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A significant interaction between sex and group effects on cancer incidence was found (*P*=.004).

Sex-stratified analysis showed a protective effect of antioxidants in men (relative risk, 0.69 [0.53-0.91]) but not in women (1.04 [0.85-1.29]).
A similar trend was observed for all-cause mortality (0.63 [0.42-0.93] in men versus 1.03 [0.64-1.63] in women; *P*=.11 for interaction).

Exposition au soleil

Première campagne 1997

Questionnaire d'habitudes d'exposition et protection au cours de l'année précédente et au cours de la vie

Seconde campagne 2001

Questionnaire modifié + questions sur les connaissances des risques

Campagne 1997

QUESTIONNAIRE " EXPOSITION AU SOLEIL "

SU·VI·MAX

Numéro de volontaire.......

Code à quatre lettres......

Date de remplissage du questionnaire

L'exposition au soleil, par excès ou par défaut, est un élément qui semble intervenir dans le déterminisme de certains phénomènes favorables ou au contraire défavorables à la santé. Il est intéressant de pouvoir évaluer globalement le type d'exposition au soleil auquel vous avez été confronté, aussi bien récemment que dans le passé. Certaines questions portent sur le passé récent (l'année écoulée), d'autres sur une durée plus longue (toute votre vie) ou plus ancienne (enfance). Certaines des questions sont spécifiques aux périodes de vacances, d'autres à des périodes de travail... Merci de bien vouloir les remplir attentivement en cochant les cases prévues ou en notant le chiffre correspondant à un choix multiple ou, dans certains cas, de fournir la réponse en clair (en toutes lettres). N'oubliez pas de bien noter, ci-dessus, votre numéro d'identification et votre code à 4 lettres (et non pas votre mot de passe) et de retourner ce questionnaire à SU.VI.MAX, BP 282, 75722 Paris Cedex 01. Par avance, merci.

1. Sur l'année qui vient de s'écouler, vous êtes-vous exposé(e) volontairement au soleil (bain de soleil), en période de vacances ou en dehors des vacances ?

◆ *En France métropolitaine :* oui non

■ Pratique du bronzage à la mer .... ☐ ☐

Si oui, nombre de jours : 1= *1 à 9 jours* ; 2= *10 à 20 jours* ; 3=*plus de 20 jours*........ |__|

■ Pratique du bronzage à la montagne .... ☐ ☐

Si oui, nombre de jours : 1= *1 à 9 jours* ; 2= *10 à 20 jours* ; 3=*plus de 20 jours*........ |__|

■ Pratique du bronzage à la campagne .... ☐ ☐

Si oui, nombre de jours : 1= *1 à 9 jours* ; 2= *10 à 20 jours* ; 3=*plus de 20 jours*........ |__|

■ Pratique du bronzage à la ville .... ☐ ☐

Si oui, nombre de jours : 1= *1 à 9 jours* ; 2= *10 à 20 jours* ; 3=*plus de 20 jours*........ |__|

◆ En France hors métropole (DOM-TOM) et à l'étranger : oui non

■ Pratique du bronzage, en région très ensoleillée, à climat de type méditerranéen ou tropical .... ☐ ☐

Si oui, ◆ Quel(s) endroit(s) : ....

◆ Nombre de jours : 1= *1 à 9 jours* ; 2= *10 à 20 jours* ; 3=*plus de 20 jours*........ |__|

2. Durant l'année qui vient de s'écouler, avez-vous séjourné plus d'1 mois dans un pays étranger très ensoleillé, à climat de type méditerranéen ou tropical ? .... oui ☐ non ☐

Si oui, ◆ Quel(s) pays : ....

◆ Durée de la (ou les) période(s) *(au total, en semaines)* : .... |__|__|

3. Durant l'année qui vient de s'écouler, quelles zones exposez-vous en général lors de vos pratiques de bronzage ? 1= *plutôt le visage* ; 2= *plutôt le corps* ; 3= *les deux*........ |__|

(si vous ne pratiquez jamais le bronzage, alors la question est sans objet = barrez la case)

4. Sur l'année qui vient de s'écouler, lorsque vous pratiquez le bronzage, avez-vous l'habitude de vous exposer aux heures les plus chaudes de la journée, entre 11 et 16h ? .... oui ☐ non ☐

(sans objet = barrez les cases)

5. Sur l'année qui vient de s'écouler, lorsque vous pratiquez le bronzage, combien de temps vous exposez-vous, en moyenne, au cours d'une journée ensoleillée ? *(sans objet = barrez la case)*

Durée d'exposition : 1= *2 heures ou moins* ; 2 = *plus de 2 heures* ; 3 = *toute la journée* .... |__|

Première partie

Habitudes d'exposition et protection au cours de l'année précédente

13 questions principales et des questions imbriquées

Seconde partie

Habitudes d'exposition et protection au cours de la vie

16 questions principales et des questions imbriquées

Campagne 2001

SU·VI·MAX

QUESTIONNAIRE " EXPOSITION AU SOLEIL "

Numéro de volontaire |__|__|__|__|__|__|__|__|

Code à quatre lettres |___| |___| |___| |___|

(voir sur votre carte de volontaire)

Date de remplissage du questionnaire:

[illegible]

1. Selon vous, quelle est la définition d'un coup de soleil ?
   (Plusieurs choix possibles, cochez la ou les réponse(s))
   - Une simple rougeur persistante .... 1 □
   - Une rougeur douloureuse .... 2 □
   - Une rougeur avec cloque .... 3 □
   - Ne sait pas .... 4 □
2. Selon vous, un coup de soleil peut-il avoir des conséquences sur la peau ?
   - oui .... 1 □
   - non .... 0 □
   - Ne sait pas .... 2 □
3. Avez-vous déjà entendu parler de mélanome ?
   - oui .... 1 □
   - non .... 0 □
4. Pensez-vous qu'un coup de soleil peut être responsable de tumeur cutanée ?
   - oui .... 1 □
   - non .... 0 □
   - Ne sait pas .... 2 □
5. Utilisez-vous des lunettes pour vous protéger du soleil ?
   - oui .... 1 □
   - non .... 0 □
6. Savez-vous ce que signifient les initiales SPF ?
   - oui .... 1 □
   - non .... 0 □
7. Pensez-vous que l'exposition au soleil est plus dangereuse à l'époque actuelle qu'auparavant ?
   - oui .... 1 □
   - non .... 0 □
   - Ne sait pas .... 2 □
8. Vous êtes-vous exposé(e) volontairement au soleil au cours de l'année 2000 qui vient de s'écouler ?
   - oui .... 1 □
   - non .... 0 □

   Si réponse non, allez directement à la question 16 page 2
   Si réponse oui, répondez aux questions 9 à 14 ci-dessous

9. Sur l'année 2000 écoulée, vous êtes-vous exposé(e) au soleil
   - à la mer en France métropolitaine ? oui .... 1 □ non .... 0 □
     si oui, nombre de jours : 1 à 9 jours=1, 10 à 20 jours=2, plus de 20 jours=3 .... |__|
   - à la montagne en France métropolitaine ? oui .... 1 □ non .... 0 □
     si oui, nombre de jours : 1 à 9 jours=1, 10 à 20 jours=2, plus de 20 jours=3 .... |__|
   - à la campagne en France métropolitaine ? oui .... 1 □ non .... 0 □
     si oui, nombre de jours : 1 à 9 jours=1, 10 à 20 jours=2, plus de 20 jours=3 .... |__|
   - à la ville en France métropolitaine ? oui .... 1 □ non .... 0 □
     si oui, nombre de jours : 1 à 9 jours=1, 10 à 20 jours=2, plus de 20 jours=3 .... |__|

Un nouveau questionnaire comportant des questions sur les connaissances des dangers du soleil et des questions plus précises sur les habitudes de protection solaire a été développé.

Exposition et protection au cours de l'année précédente

- pratique d'exposition volontaire
- bronzage dans des régions à fort ensoleillement
- séjours dans des pays à fort ensoleillement
- exposition aux heures chaudes (11-16h)
- utilisation produits de protection visage / corps
- autres moyens de protection
- coups de soleil
- nudisme
- pratique de séances d'U.V. artificiels
- auto-appréciation globale de l'intensité d'exposition
- importance accordée à la pratique de bronzage

Exposition et protection au cours de la vie

Mêmes thèmes que dans la première partie

+

- pratique de professions à l'extérieur
- pratique de sports de montagne
- pratique de sports nautiques
- pratique de « hobby » exposant particulièrement au soleil
- antécédents de prise de coups de soleil dans l'enfance et dans la vie adulte

Connaissance des risques

1. **Selon vous, quelle est la définition d'un coup de soleil ?**
   Plusieurs choix possibles, cochez la ou les réponse(s)

Une simple rougeur persistante	**1**□
Une rougeur douloureuse	**2**□
Une rougeur avec cloque	**3**□
Ne sait pas	**4**□

2. **Selon vous, un coup de soleil peut-il avoir des conséquences sur la peau ?**
3. **Avez-vous déjà entendu parler de mélanome ?**
4. **Pensez-vous qu'un coup de soleil peut être responsable de tumeur cutanée ?**
5. **Utilisez-vous des lunettes pour vous protéger du soleil ?**
6. **Savez-vous ce que signifient les initiales SPF ?**
7. **Pensez-vous que l'exposition au soleil est plus dangereuse à l'époque actuelle qu'auparavant ?**

Publications

Sun exposure behaviour of a general adult population in France. C. Guinot, et al. Dans : Skin and Environment – Perception and Protection (J. Ring et al, éditeurs), Monduzzi editore SpA, Bologne, 2001, p.1099-1106.

Sun-reactive skin type in 4912 French adults participating in the SU.VI.MAX study. C. Guinot, et al. Photochem Photobiol, 2005,81:934-940.

Expatriates in high UV index and tropical countries: sun-exposure and protection behaviour in 9,416 French adults. K. Ezzedine, et al. J Travel Med, 2007;14:85-91.

Travellers to high UV-index countries: Sun-exposure behaviour in 7,822 French adults. K. Ezzedine, et al. Travel Med Infec Dis, 2007;5:176-182.

Artificial and natural ultraviolet radiation exposure: beliefs and behaviour in 7,200 French adults. K. Ezzedine, et al. J Eur Acad Dermatol Venereol, 2008;22:186-194.

C. Guinot, *et al*. Sun exposure behaviour of a general adult population in France. Dans : Skin and Environment – Perception and Protection (J. Ring et al, éditeurs), Monduzzi editore S.p.A., Bologne, 2001, p.1099-106.

Sun Exposure Behaviour of a General Adult Population in France

C. Guinot[1], D. Malvy[2], J. Latreille[1], P. Preziosi[3], P. Galan[3], L. Vaillant[4], M. Tenenhaus[5], S. Hercberg[3] and E. Tschachler[1,6]

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Summary

To characterise sun exposure behaviour over the past year and during lifetime, a questionnaire was sent to the volunteers of the SU.VI.MAX epidemiological study. A clustering analysis was conducted on the first part of the questionnaire to select homogeneous groups of variables, then Principal Component Analyses (PCA) were performed on these groups to obtain scores. The same analysis was conducted on the lifetime data. Then to study the relationship between the data from both parts, a PCA was performed on all the scores. The three scores and the additional data from the first part of the questionnaire showed a good relationship with the nine scores and the additional data issued from the second part. The scores developed may be used in cohort studies to study the relationship between sun exposure, photoaging and the onset of skin cancers.

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A clustering analysis was conducted on sun exposure behaviour over the past year to select homogeneous groups of variables, then Principal Component Analyses (PCA) were performed on these groups to obtain scores. A similar analysis was conducted on the lifetime data.

Then, to study the relationship between the data desribing the past year and those describing lifetime habits, a PCA was performed on all the scores. The **three scores** and the additional data describing the recent behaviour showed a good relationship with the **nine scores** and the additional data describing lifetime habits.

These scores may be used in cohort studies to study the relationship between sun exposure intensity, photoaging severity and the onset of skin cancers.

Scores « sur la vie »

Intensity of lifetime sun exposure (Cronbach's α=0.80)

-1.34 +0.64 If in the habit of voluntary sun exposure
+0.60 If the body and face were exposed
+0.58 If the exposure was between 11 a.m. and 4 p.m.
+0.48 If the subject feels that he or she was moderately or greatly exposed
+0.52 If sunbathing is important or very important

Sunburn experienced during childhood (Cronbach's α=0.79)

-1.73 +0.86 If a sunburn occurred during childhood
+0.46 If the sunburn occurred every summer time during childhood
+0.69 If the most severe sunburn during childhood was more than a simple redness
+0.78 If the skin peeled after a sunburn during childhood

Sunburn experienced as an adult (Cronbach's α=0.69)

-2.24 +1.17 If a sunburn occurred in adulthood
+0.47 If the sunburn occurred every summertime in adulthood
+0.80 If the most severe sunburn in adulthood was more than a simple redness
+0.89 If the skin peeled after a sunburn in adulthood

Score « sur l'année précédente »

Intensity of sun exposure over the past year (Cronbach's α=0.69)

-1.13	+0.17	If tanning was done at the seaside between 1 and 9 days
	+0.31	" between 10 and 20 days
	+0.51	" more than 20 days
	+0.28	If tanning was done in the city between 1 and 9 days
	+0.43	" between 10 and 20 days
	+0.56	" more than 20 days
	+0.20	If tanning was done in the country between 1 and 9 days
	+0.32	" between 10 and 20 days
	+0.46	" more than 20 days
	+0.32	If tanning was done in the mountains between 1 and 9 days
	+0.40	" between 10 and 20 days
	+0.46	" more than 20 days
	+0.21	If sun exposure lasted 2 hours or less per day
	+0.50	" more than 2 hours per day
	+0.49	If exposure involved body and face
	+0.50	If exposure was between 11 a.m. and 4 p.m.
	+0.54	If the subject feels that he or she was moderately or greatly exposed
	+0.39	If sunbathing is important or very important

Scores « sur l'année précédente »

Sunburn experienced over the past year (Cronbach's α=0.75)

-0.68 +0.75 If the individual suffered sunburn during the year

+1.08 If the number of sunburns is greater than 5 during the year

+0.96 If the most severe sunburn was more severe than simple redness

+0.93 If the skin peeled after a sunburn

Sun protection over the past year (Cronbach's α=0.84)

-0.79 +0.49 If a protective product was used while getting a suntan

+0.55 If a protective product was used throughout the period of exposure

+0.54 If a protective product was applied regularly several times a day

+0.57 If a product with a SPF* rating of over 15 was used for the face

+0.59 If a product with a SPF rating of over 15 was used for the body

+0.52 If a protective product was used outside of the exposure period

Scores « sur la vie »

Practice of mountain sport in which sun exposure is particularly great (Cronbach's α=0.84)

-0.65 +0.82 If the subject engages in a mountain sport where sun exposure is particularly great

+1.00 If the number of days of sports activities is > 200 days *

+0.94 If the subject still engages in that sport

Practice of nautical sport in which sun exposure is particularly great (Cronbach's α=0.83)

-0.43 +1.01 If the subject engages in a nautical sport where sun exposure is particularly great

+1.31 If the number of days of sports activities is > 400 days *

+1.29 If the subject still engages in that sport

Practice of hobby in which sun exposure is particularly great (Cronbach's α=0.86)

-0.88 +0.80 If the subject engages in a hobby where sun exposure is particularly great

+0.79 If the number of days of hobby activities is > 900 days *

+0.80 If the subject still engages in that hobby

Scores « sur la vie »

Practice of nudism (Cronbach's α=0.63)

-0.30 +1.34 If nudism is practised

+1.64 If nudism is practised several weeks per year

+1.79 If the number of years that nudism has been practised is > 10 years *

UV tanning session (Cronbach's α=0.85)

-0.38 +1.29 If the subject engages in UV tanning sessions

+2.89 If the subject engages in UV tanning sessions regularly

+1.84 If the number of years of UV tanning is > 2 years *

Practice of an occupation where sun exposure is particularly great (Cronbach's α=0.83)

-0.29 +1.03 If an outdoor occupation is practised where sun exposure is particularly great

+1.24 If the number of days that the 1st occupation was practised is >1000 *

+2.09 If the number of days that the 2nd occupation was practised is >1078 *

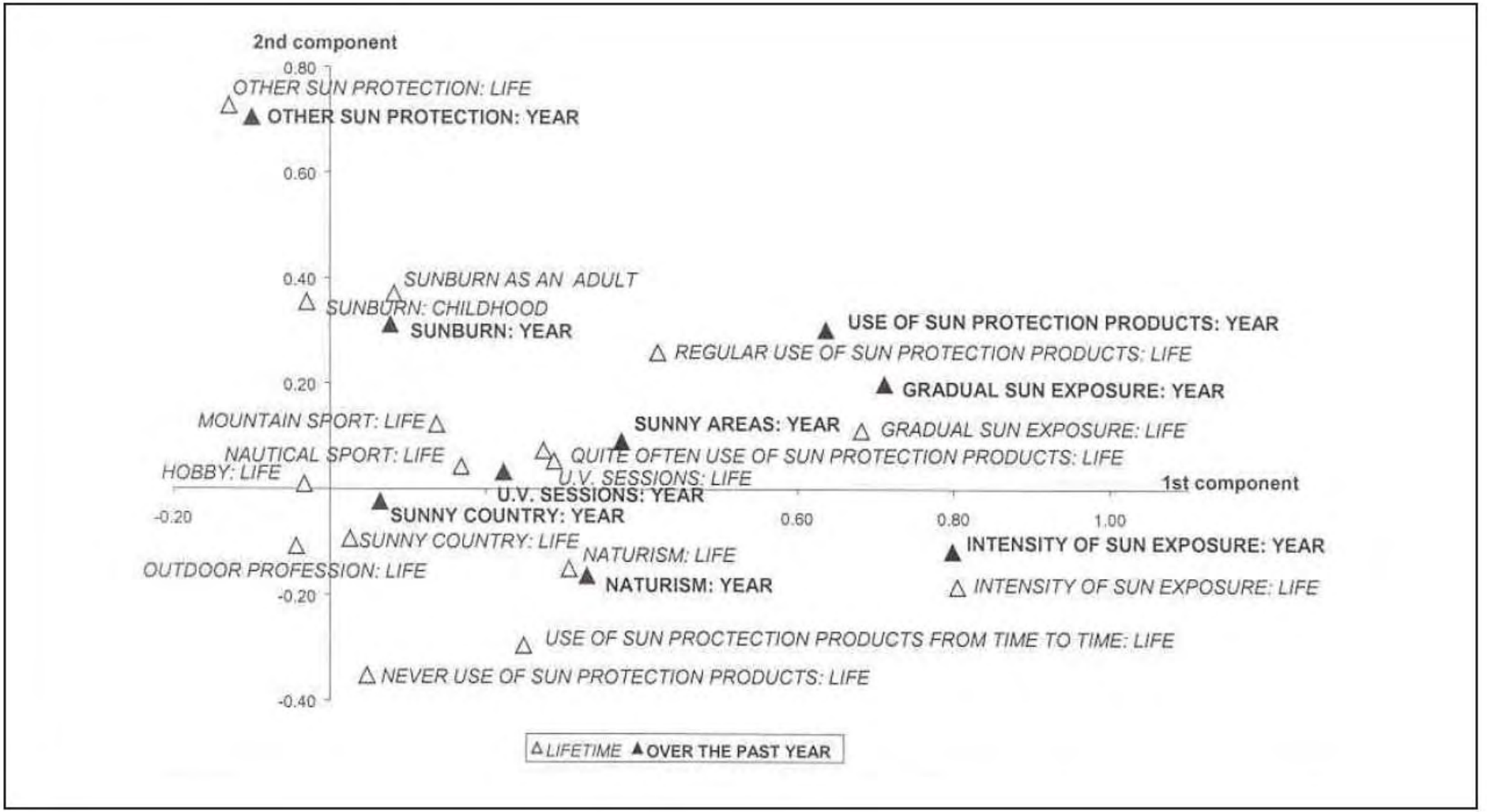
+1.07 If in the first occupation there was exposure between 11 a.m. and 4 p.m.

+1.76 If in the second occupation there was exposure between 11 a.m. and 4 p.m.

* > median

Résultats

Association entre « année » et « vie »



C. Guinot *et al*. Sun reactive skin type in 4912 French adults participating in the SU.VI.MAX study. *Photochem Photobiol*, 2005;81:934-940.

Sun-reactive Skin Type in 4912 French Adults Participating in the SU.VI.MAX Study¶

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ABSTRACT

Phototype classifications were initially developed in an attempt to predict the skin reactions of patients to phototherapy and are now widely used to advise individuals with regard to sun protection. A transversal study was conducted on the SU.VI.MAX cohort to estimate the frequency of sun-reactive skin features in a large, general adult population-based sample, and to describe the associations between these features. The data were collected 3 years after the beginning of the SU.VI.MAX nutritional intervention study on 4912 volunteers (2868 women aged 35–60 years and 2044 men aged 45–60 years). A multiple correspondence analysis was performed to study the associations between the features. The results showed that these features correspond to a one-dimensional phenomenon, which allowed us to establish a score to summarize skin sensitivity to sun exposure. Furthermore, we found a link between gender and phototype using the Césarini classification (phototype ≥ IV: 37% of women, 47% of men). The analysis of the relationship with sun-reactive skin features and the score revealed the same trend. Phenotypic evaluation appears to be a good estimator of skin sensitivity to sun exposure for clinical screening or for use in research, and is easy to collect at a lower cost. Moreover, the sun sensitivity difference between gender should be considered in education about photoprotection.

INTRODUCTION

The concept of a sun-reactive skin type has been widely used among dermatologists. Recently, this concept has generated controversy in large part because of its subjectivity and ambiguities in its definition (1,2). Propensity to redden after sun exposure, constitutive and facultative skin pigmentation, and pigmentation of hair reflect polygenetic inheritance (3,4). These features are commonly used in epidemiological studies to assess sun sensitivity and to estimate an individual's ability to resist UV damage (5). However, repeated sun exposure may modify transitorily sun sensitivity, as adapted subjects can respond more like higher phototypes than nonadapted subjects of the same original phototype (6). Moreover, freckles and history of sunburn are linked to an individuals' sun sensitivity and behavior (7).

The phototype classification, which is indicative of the skin's natural protection against the sun, was proposed in the mid-1970s by Fitzpatrick (5) in order to produce a simple tool to help with the dosing of UV therapy for certain skin diseases. Its use was subsequently extended to assess the individual risk of sunburn and to define the principles of suitable protection (5). The phototype classification used in the present study was initially proposed by Césarini in 1977 (8). It is based on two dynamic skin reactions after sun exposure that are also used in Fitzpatrick's classification (*i.e.* the frequency of sunburn and the degree of tanning) and on three phenotypic features (*i.e.* the skin color in winter, the natural hair color at the age of 20 and the number of freckles). Combinations of

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The data were collected on 4912 volunteers : 2868 women (35–60) and 2044 men (45–60). A multiple correspondence analysis was performed to study the associations between the features.

The results showed that these features correspond to a onedimensional phenomenon, which allowed us to establish a score to summarize skin sensitivity to sun exposure. Furthermore, we found a link between gender and phototype : (Césarini phototype IV: 37% of women, 47% of men). The relationship with the sun-reactive skin features and the score revealed similar trends.

Phenotypic evaluation appears to be a good estimator of skin sensitivity to sun exposure for clinical screening or for use in research, and is easy to collect at a lower cost.

Moreover, the sun sensitivity difference between gender should be considered in education about photoprotection.

Phototype de Césarini

phénotypiques **dynamiques**

Phototype de Césarini					Phototype
Couleur naturelle des cheveux (20 ans)	Couleur de la peau en hiver	Éphélides	Fréquence des coups de soleil	Intensité de bronzage	
Blancs	Albinos	Non	Constant	Non	0
Roux	Laiteuse	Nombreuses	Constant	Non	I
Blonds	Claire	Nombreuses	Constant	Hâle léger	II
Blonds	Claire	Quelques	Fréquent	Clair/foncé	IIIa
Châtains	Mate	Quelques	Fréquent	Clair/foncé	IIIb
Bruns	Mate	Non	Rare	Foncé	IV
Bruns	Mate	Non	Exceptionnel	Très foncé	V
Noirs	Noire	Non	Absent	Noir	VI

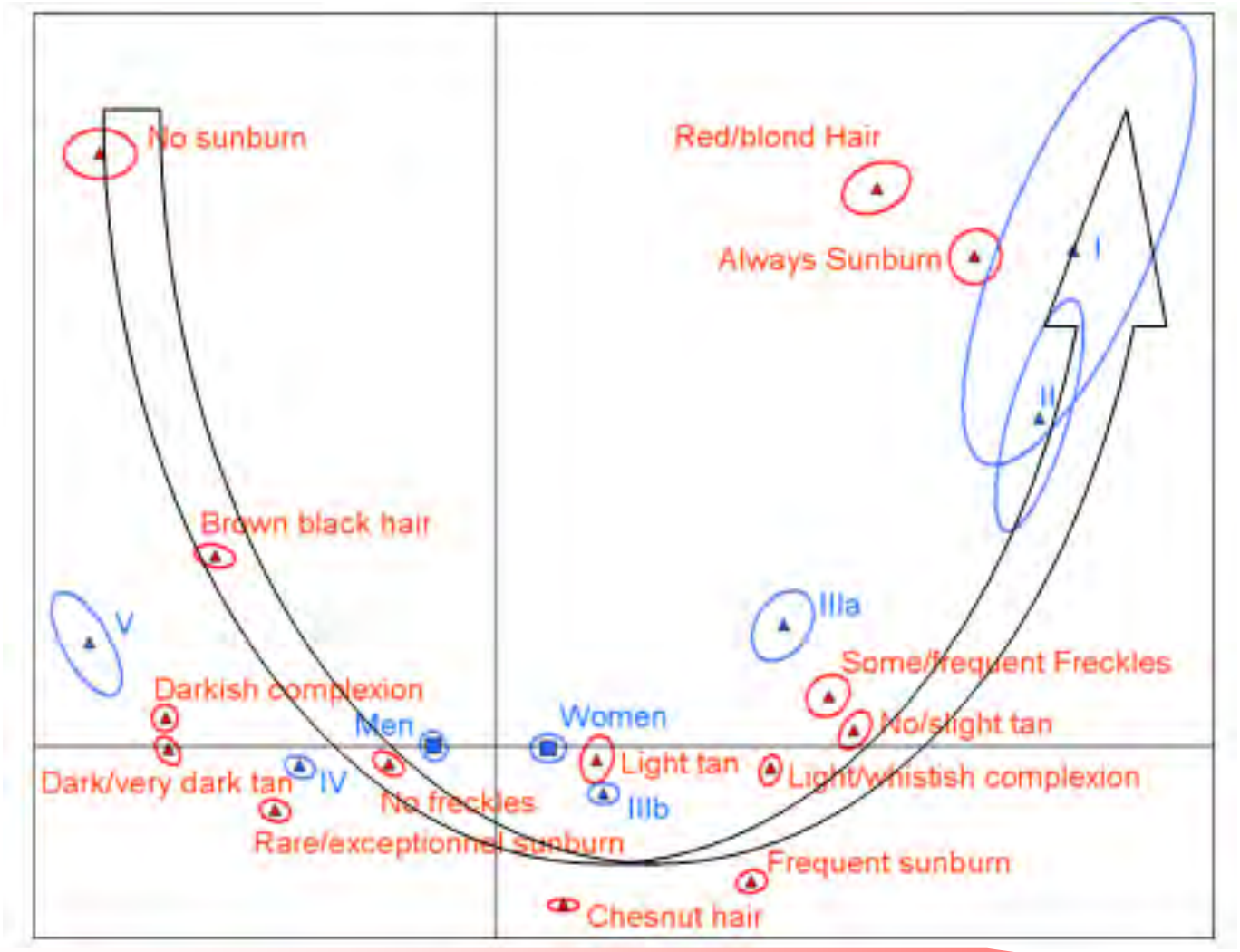
Source : Césarini J-P. Soleil et peau. J Med Esthet 1977;14:5-12

Résultats

(%)		Femme	Homme	Total
Couleur naturelle des cheveux à 20 ans	Roux/Blonds	10	8 §	9
	Châtains	67	60	64
	Bruns/Noirs	23	32	27
Couleur de la peau en hiver	Claire	62	51 §	57
	Mate	38	49	43
Éphélides	Absence	72	78	75
	Présence	28	22	25
Fréquence des coups de soleil	Absent	5	4 §	5
	Rare/exceptionnel	46	55	50
	Fréquent	37	33	35
	Constant	12	9	10
Intensité de bronzage	Aucun/Hâle léger	33	22 §	29
	Clair/foncé	31	28	29
	Foncé/très foncé	36	50	42
Phototype	I & II	3	2 §	2
	IIIa	13	6	10
	IIIb	48	45	47
	IV-V	37	47	41

§ **Différence significative (test du χ^2 : p <0.0001)**

Résultats



Score de sensibilité de la peau au soleil

Résultats

Score de sensibilité de la peau au soleil [0-10]

Caractéristiques	Modalités	Coefficients	Score
Couleur naturelle des cheveux à 20 ans	Roux/blonds	+1,16	**+0,20**
	Châtains	+0,20	
	Bruns/Noirs	- 0,87	
Couleur de la peau en hiver	**Laiteuse/claire**	+0,83	**+0,83**
	Mate	- 1,02	
Éphélides	Aucune	- 0,34	**+1,01**
	Présence	+1,01	
Fréquence des coups de soleil	Aucun	- 1,23	**+1,45**
	Exceptionnel/rare	- 0,67	
	Fréquent	+0,78	
	Constant	+1,45	
Intensité de bronzage	Aucun/Hâle léger	+1,09	**+0,30**
	Clair	+0,30	
	Foncé/très foncé	- 1,00	
Constante		+4,46	**+4,46**
		Total :	**+8,25**

Résultats

		Skin sensitivity to sun exposure score		
		N	Mean (± standard deviation)	[CI 95%]
Césarini phototype	I	10	8.3 (± 1.8)† a	[7.0 – 9.5]
	II	76	8.0 (± 1.4) a	[7.7 – 8.2]
	IIIa	373	6.3 (± 2.0) b	[6.1 – 6.5]
	IIIb	1598	5.1 (± 2.3) b	[5.0 – 5.2]
	IV	1179	3.1 (± 2.1) c	[3.0 – 3.3]
	V	210	1.8 (± 1.6) d	[1.6 – 2.0]
Gender	Male	1485	4.0 (± 2.5)‡	[3.9 – 4.1]
	Female	1961	4.8 (± 2.5)	[4.7 – 4.9]
Geographic location	West	1334	4.8 (± 2.6)‡	[4.6 – 4.9]
	East	2107	4.3 (± 2.5)	[4.2 – 4.4]
	North	1587	4.6 (± 2.6)‡	[4.5 – 4.8]
	South	1854	4.3 (± 2.5)	[4.2 – 4.4]

K. Ezzedine, *et al.* Travellers to high UV-index countries: Sun-exposure behaviour in 7,822 French adults. Travel Medicine and Infectious Diseases, 2007;5:176-182.

Travellers to high UV-index countries: Sun-exposure behaviour in 7822 French adults ☆

Khaled Ezzedine[a,b,*], Christiane Guinot[c,d], Emmanuelle Mauger[c], Thierry Pistone[e], Marie-Catherine Receveur[e], Pilar Galan[b], Serge Hercberg[b], Denis Malvy[e,f]

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KEYWORDS
Long-term travellers;
Sun exposure behaviour;
Sun protection behaviour

Summary
Background: Travel health information includes warning on sun exposure, particularly for fair-skinned individuals travelling to tropical countries.
Method: A self-completed questionnaire on sun exposure behaviour was sent to the 12,741 French adults enroled in the SU.VI.MAX cohort. Among the 7822 participants, 196 (110 women and 86 men) declared at least one visit to a high UV-index country over the past year for more than 1 month, subsequently referred to as long-term travellers. The remaining 7626 participants (non-travellers) accounted for 4862 women and 2764 men.
Results: Women travellers declared more frequently skin exposure to the sun over the past year, practised tanning in high UV-index areas more than 2 h daily, experienced intensive sun exposure than non-travellers. Moreover, they asserted that basking in the sun is very important. Comparable results were found in men. The use of sun protection products was similar in travellers and non-travellers, but women tended to use sunscreen products more often, more regularly and with a higher sun protection factor (SPF) than men.

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K. Ezzedine, *et al*. Expatriates in high UV index and tropical countries: sun-exposure and protection behaviour in 9,416 French adults. Journal of Travel Medecine, 2007;14:85-91.

Expatriates in High–UV Index and Tropical Countries: Sun Exposure and Protection Behavior in 9,416 French Adults

Khaled Ezzedine, MD,*†Christiane Guinot, PhD, DSc,‡§ Emmanuelle Mauger, MSc,‡ Thierry Pistone, MD,‖ Nadia Rafii, MD,* Marie-Catherine Receveur, MD,‖ Pilar Galan, MD, PhD,† Serge Hercberg, MD, PhD,† and Denis Malvy, MD, PhD‖¶

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DOI: 10.1111/j.1708-8305.2007.00108.x

Background. Overexposure to sunlight during long stays in tropical countries can reveal short- and long-term harmful effects on the skin of Caucasian residents, especially for fair-skinned subjects. The aim of this study was to describe sun exposure and sun protection behaviors during lifetime among French adults who declared having experienced at least one expatriation period in tropical or high–sun index areas for a duration of more than three consecutive months.

Methods. A self-reported questionnaire on sun exposure behavior was addressed two times, in 1997 and 2001, to the 12,741 French adult volunteers enrolled in the SU.VI.MAX cohort. A total of 8,084 subjects answered to the first survey and 1,332 additional responders answered to the second. Among the 9,416 individuals, 1,594 (652 women and 942 men) corresponded to expatriates and the remaining 7,822 to nonexpatriates (4,972 women and 2,850 men). A descriptive analysis of sun exposure and sun protection behaviors during lifetime of expatriates and nonexpatriates was performed by gender.

Results. Among women, 39% of expatriates belonged to the 50 to 60 class of age at inclusion, versus 33% in nonexpatriates (72 and 55% in men, respectively). In women, expatriates declared more frequently having during lifetime exposed voluntarily their skin to the sun, practiced tanning between 11 a.m. and 4 p.m., less gradually exposed their skin, experienced intensive sun exposure, and exposed their skin during nautical sports and practiced naturism. In men, expatriates declared more frequently having experienced intensive sun exposure and exposed their skin during outdoor occupations and during nautical and mountain sports.

Conclusions. Although expatriates are aware of travel health advices concerning the countries where they planned to stay, they are usually poorly informed about sun exposure risk factors. Such individuals who planned to expatriate in countries with a high ultraviolet index should benefit from a visit to a travel clinic including specific health care information for risk related to sun exposure, ie, skin cancers and photoaging.

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K. Ezzedine, *et al.* Artificial and natural ultraviolet radiation exposure: beliefs and behaviour in 7,200 French adults. J Eur Acad Dermatol Venereol, 2008;22:186-194.

Artificial and natural ultraviolet radiation exposure: beliefs and behaviour of 7200 French adults

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Keywords
behaviour, epidemiology, indoor tanning, phototype, skin, ultraviolet radiation

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Abstract

Background Despite the increasing use of indoor tanning facilities, little is known regarding the behaviour of adults with respect to artificial and natural ultraviolet (UV) radiation exposure and the relationship between the two forms of exposure.

Objectives To describe the beliefs and behaviour of French middle-aged volunteers regarding artificial and natural UV exposure.

Methods Cross-sectional study of a French national cohort using a self-completed questionnaire.

Results Participants were identified as 'indoor UV tanners' (n = 1076) and as 'non-users' (n = 6124). Predictor factors associated with indoor tanning were gender, age, smoking, phototype, region of residence, sun exposure during hobbies, voluntary sun exposure in particular during the hottest hours of the day, nudism practice, facial sunscreen habits, sunglass use, importance for lying in the sun and the claim 'ever heard of melanoma'.

Limitations The quality of information may be limited by the data collection method.

Conclusion Whereas indoor tanning should be discouraged, it seems that indoor tanners are also regular sunbathers unconcerned about the risk of photoageing and skin cancer occurrence. Moreover, indoor tanners seem to have more behavioural risk factors for cancer, such as smoking.

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Whereas indoor tanning should be discouraged, it seems that indoor tanners are also regular sunbathers unconcerned about the risk of photoageing and skin cancer occurrence. Moreover, indoor tanners seem to have more behavioural risk factors for cancer, such as smoking.

Résultats

<u>Durant votre vie</u>, avez-vous utilisé une rampe à U.V. (ultra-violets) ? oui……**1**□ non……..**0**□

si oui, - à quel rythme : exceptionnellement……**1**□ régulièrement……..**2**□

- nombre d'années de pratique : …… └──┘└──┘
- pour quelles raisons : └──────────────────────────────────────┘

Participants who declared having experienced any artificial UV radiation equipment usage during their lifetime, <u>except for medical purposes</u>, were considered as "indoor UV tanners".

103 individuals declared having experienced artificial UV light only for medical purposes: acne, psoriasis, vitiligo, rickets, vitamin D deficiency or allergies.

Résultats

Table 3 Results of multiple logistic regression analyses for women, men and both gender (comparable classes of age)

	Women 35–60 years (n = 3528*)				Men 45–60 years (n = 2522*)				All 45–60 years (n = 4752*)			
Determinant factors	***n***	**AOR**	**95% CI**	**Wald test, *P***	***n***	**AOR**	**95% CI**	**Wald test, *P***	***n***	**AOR**	**95% CI**	**Wald test, *P***
Gender												
Men	–	–	–	–	–	–	–	–	2522	1.0		
Women	–	–	–	–					2230	2.5	(2.0–3.1)	< 0.0001
Classes of age												
50–60	1240	1.0			–	–	–	–	–	–	–	–
40–49	1767	1.7	(1.4–2.0)	< 0.0001	–	–	–	–	–	–	–	–
35–39	521	2.0	(1.5–2.6)	< 0.0001	–	–	–	–	–	–	–	–
Classes of age												
55–60	–	–	–	–	784	1.0			–	–	–	–
45–54	–	–	–	–	1738	1.5	(1.0–2.2)	0.0816	–	–	–	–
Classes of age												
55–60	–	–	–	–	–	–	–	–	1354	1.0		
50–54	–	–	–	–	–	–	–	–	1404	1.2	(0.9–1.5)	0.26
45–49	–	–	–	–	–	–	–	–	1994	1.5	(1.2–2.0)	0.0005
Smoking Never	2063	1.0			934	1.0			2346	1.0		
Ex-smoker	1018	1.2	(1.0–1.5)	0.0640	1274	1.4	(1.0–2.1)	0.0655	1860	1.4	(1.1–1.7)	0.0026
Current smoker	447	1.5	(1.2–2.0)	0.0006	314	1.7	(1.0–2.9)	0.0533	546	1.6	(1.2–2.1)	0.0014
Fitzpatrick phototype												
III/IV	2334	1.0			2017	1.0			3505	1.0		
I/II	1194	1.3	(1.1–1.6)	0.0041	505	2.1	(1.4–3.0)	0.0003	1247	1.4	(1.2–1.8)	0.0008
Professional activity												
Employed/workers/non-active subjects	1572	1.0			763	1.0			1857	1.0		
Self-employed	116	1.9	(1.2–3.1)	0.0073	171	1.1	(0.5–2.3)	0.81	252	1.6	(1.0–2.5)	0.0505
Managerial staff/intermediate profession	1840	1.2	(1.0–1.5)	0.0340	1588	1.1	(0.7–1.7)	0.67	2643	1.2	(0.9–1.4)	0.14
Region of residence												
Centre/South	1480	1.0			1121	1.0			2050	1.0		
North	2048	1.3	(1.1–1.6)	0.0038	1401	1.4	(1.0–1.9)	0.0688	2702	1.3	(1.1–1.6)	0.0125
Outdoor professional occupation												
Yes	245	1.0			534	1.0			694	1.0		
No	3283	1.7	(1.1–2.5)	0.0101	1988	1.1	(0.7–1.7)	0.66	4058	1.4	(1.0–1.9)	0.0774
Sun exposure during mountain sports												
No	2254	1.0			1563	1.0			3029	1.0		
Yes	1274	1.0	(0.8–1.2)	0.86	959	1.5	(1.1–2.2)	0.0140	1723	1.1	(0.9–1.4)	0.24
Sun exposure during hobbies												
Yes	1807	1.0			1669	1.0			2890	1.0		
No	1721	1.3	(1.1–1.5)	0.0088	853	1.3	(0.9–1.8)	0.14	1862	1.4	(1.1–1.7)	0.0010

Résultats

Table 3 *Continued*

Determinant factors	Women 35–60 years (*n* = 3528*)				Men 45–60 years (*n* = 2522*)				All 45–60 years (*n* = 4752*)			
	n	AOR	95% CI	Wald test, *P*	*n*	AOR	95% CI	Wald test, *P*	*n*	AOR	95% CI	Wald test, *P*
Voluntary sun exposure												
No voluntary sun exposure	1283	1.0			1070	1.0			1864	1.0		
Not at the hottest hours of the day	777	1.5	(1.2–2.0)	0.0008	460	1.6	(1.0–2.7)	0.0527	970	1.9	(1.5–2.5)	< 0.0001
At the hottest hours of the day (11 am–4 pm)	1468	1.9	(1.5–2.4)	< 0.0001	992	1.7	(1.1–2.6)	0.0194	1918	2.2	(1.7–2.8)	< 0.0001
Nudism practice												
No	3217	1.0			2281	1.0			4315	1.0		
Yes	311	1.5	(1.1–2.0)	0.0037	241	2.3	(1.5–3.5)	0.0001	437	1.7	(1.3–2.3)	0.0001
Sunburn during adulthood												
No	349	1.0			242	1.0			495	1.0		
Yes	3179	1.5	(1.1–2.2)	0.0123	2280	0.9	(0.5–1.6)	0.68	4257	1.3	(0.9–1.8)	0.20
Facial sunscreen habits												
No	992	1.0			1503	1.0			2184	1.0		
Yes	2536	1.3	(1.1–1.6)	0.0145	1019	1.6	(1.2–2.3)	0.0046	2568	1.6	(1.3–1.9)	< 0.0001
Other sorts of protection												
Yes	2996	1.0			2080	1.0			3973	1.0		
No	532	1.3	(1.0–1.6)	0.0391	442	0.9	(0.6–1.5)	0.80	779	1.1	(0.9–1.5)	0.29
Use of sunglass												
No	516	1.0			567	1.0			919	1.0		
Yes	3012	1.6	(1.2–2.1)	0.0014	1955	1.2	(0.8–1.8)	0.45	3833	1.4	(1.1–1.8)	0.0200
Consideration for lying in the sun												
Not important/not very important	2702	1.0			2210	1.0			3932	1.0		
Very important/extremely important	826	1.7	(1.4–2.1)	< 0.0001	312	2.2	(1.4–3.3)	0.0006	820	1.7	(1.3–2.1)	< 0.0001
Ever heard about melanoma												
No	69	1.0			207	1.0			249	1.0		
Yes	3459	0.8	(0.4–1.5)	0.48	2315	4.3	(1.3–13.7)	0.0146	4503	2.5	(1.2–5.3)	0.0127

n = number of individuals. * Due to missing data, values do not add up to 4251 for women and 2949 for men.

Perspectives

Objectifs de l'étude NutriNet-Santé

1. **Etudier les relations entre les apports en nutriments, aliments, comportements alimentaires, l'activité physique et :**
   - **la mortalité globale et spécifique (cancer ou maladies cardiovasculaires),**
   - **l'incidence des cancers, maladies cardiovasculaires, obésité et surpoids diabète de type 2, hypertension artérielle, syndrome métabolique et qualité de vie**

2. **Etudier les déterminants (sociologiques, économiques, culturels, biologiques…) des comportements alimentaires, de l'état nutritionnel et de l'état de santé**

3. **Surveiller dans le temps l'évolution des apports alimentaires, de l'activité physique et de l'état nutritionnel de la population.**

4. **Evaluer l'impact de campagnes ou d'actions de santé publique (connaissance, perception, efficacité...)**

Possibilité de greffer des protocoles spécifiques (questionnaires sur Internet) : plate-forme « vivante » pour la recherche, la surveillance, l'évaluation…