Patient Perceptions on Nutrition and Skin Health

Josephine Hai[1], Adrianne Pan[2], Aliza Hasan[1], Raja Sivamani[1,2]

University of California Davis School of Medicine[1], California Northstate University College of Medicine[2]

UC**DAVIS** HEALTH | SCHOOL OF MEDICINE

OBJECTIVE

Numerous studies in clinical literature have explored the link between nutrition and skin. However, it remains unclear whether patients come to their dermatologists with knowledge from these studies and where they obtain their skin health information.

We characterized patient perceptions surrounding nutrition and skin health, including what patients identify as aggravating and alleviating foods and their sources of information.

INTRODUCTION

- Proper nutrition can have positive effects on human skin condition, whereas inadequate nutrition can negatively affect skin health (1).

- For example, malnutrition can result in cutaneous changes (2), and nutritional supplementation with antioxidants has been associated with improved and accelerated wound healing (9).

- Generally, researchers agree that higher intake of green and yellow vegetables and lower intake of saturated fats and carbohydrates is associated with younger looking skin (13).

- Chocolate and dairy (21) have especially been implicated in acne vulgaris exacerbation. For psoriasis, some studies suggest foods with anti-inflammatory effects like olive oil help treat psoriasis, while proinflammatory foods such as alcohol should be avoided (30). Research is more limited for seborrheic dermatitis, rosacea, and eczema.

- Our study characterizes how much patients think nutrition contributes to their skin health and foods they think are good or bad for their skin. We compared responses from healthy patients to responses from patients with common inflammatory skin conditions.

METHODS

Design: A questionnaire assessing perception of the influence of nutrition on skin health was administered to 409 teen and adult participants.

Setting: The questionnaire was administered at UC Davis Dermatology and Pacific Skin Institute in Sacramento, CA.

Survey:
- A Likert-type scale assessed how strongly respondents agreed or disagreed with the statement "Nutrition affects skin health"
- They were asked whether they had a skin condition, their sources of information, their race, and education level.
- They were also asked to identify foods (free response) they believed had positive and negative effects on their skin.
- Foods were grouped by category, e.g.; "chips", "fatty foods", and "fried foods" were all grouped under "Fatty/fried foods."
- Categories were then each assigned an identifying number and responses were analyzed using chi-square tests of independence with 1 degree of freedom, $p < .05$ being considered significant.
- Responses were also stratified by skin diseases: acne vulgaris, eczema, seborrheic dermatitis, psoriasis, and rosacea.

RESULTS

	Agree		Disagree		Total
	N	%	N	%	N
Healthy	159	84.57	29	15.43	188
Skin Condition	179	81.00	42	19.00	221

$x^2(1) = 0.907$. $p = .3409$. This result is *not* significant at $p < .05$.

Table 1: Skin condition status, attitude toward nutritional effect on skin. Of all participants, 83% believed that nutrition affects skin health. There was no significant relationship between skin condition and attitude toward nutritional effect on skin. Respondents without skin conditions (85%) were not more likely to agree than those with skin conditions (81%).
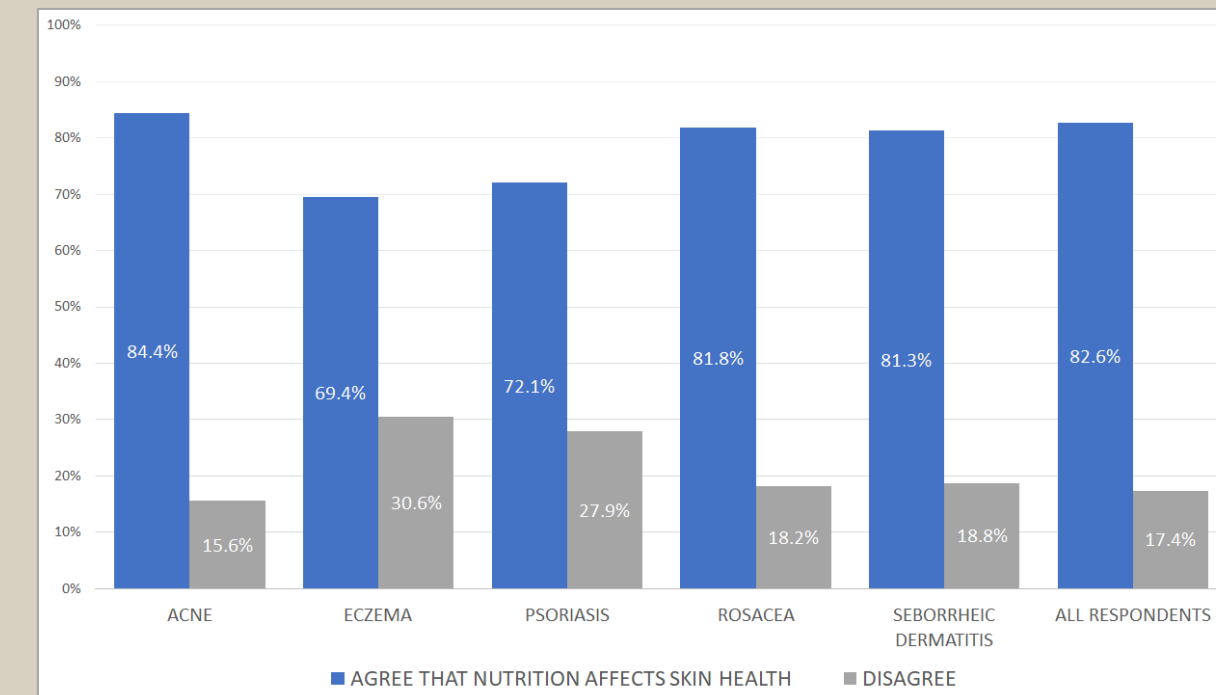
Figure 1: Attitude toward nutritional effect on skin, stratified by common skin conditions. A similar proportion of respondents across acne vulgaris, atopic dermatitis, psoriasis, rosacea, and seborrheic dermatitis agreed that nutrition affects skin health.

	Reputable		Non-reputable		Total
	N	%	N	%	N
Healthy	107	56.91	81	43.08	188
Skin Condition	151	68.33	70	31.67	221

$x^2(1) = 5.6796$. $p = .017163$. This result is significant at $p < .05$

Table 2: Skin condition status, source of information. Those with skin conditions (68%) were more likely than those without (57%) to get their skin-related information from a reputable source. Reputable sources were defined as physicians and scientific journals, while all other sources were classified as non-reputable.

	Reputable		Non-reputable		Total
	N	%	N	%	N
Agree	202	59.76	136	40.24	338
Disagree	56	78.87	15	21.13	71

$x^2(1) = 9.2007$. $p = .002419$. This result is significant at $p < .05$.

Table 3a: Attitude toward nutritional effect on skin, source of information. Respondents who disagreed (79%) were more likely to get their information from a reputable source than those that agreed (60%).

	Reputable		Non-reputable		Total
	N	%	N	%	N
Agree	259	76.63	79	23.37	338
Disagree	62	87.32	9	12.68	71

$x^2(1) = 3.9757$. $p = .046162$. This result is significant at $p < .05$.

Table 3b: Attitude toward nutritional effect on skin, source of information: adjusted to include online blogs as reputable. When online blogs were included as reputable sources in addition to physicians and scientific journals, the relationship was not as significant as demonstrated in Table 3a.

Food Category	Skin Conditions					Percent of selections
	Acne	Eczema	Psoriasis	Rosacea	Seborrheic Dermatitis	
fruits and vegetables	66.67%	47.22%	53.49%	63.64%	68.75%	44.90%
water	40.00%	38.89%	41.86%	18.18%	37.50%	29.59%
unsaturated fats	8.89%	11.11%	11.63%	9.09%	12.50%	8.16%
vitamins and minerals	15.56%	5.56%	6.98%	9.09%	12.50%	7.65%
antioxidants	4.44%	5.56%	4.65%	9.09%	6.25%	4.08%
probiotics	6.67%	2.78%	2.33%	9.09%	0.00%	3.06%
nuts, soy	2.22%	0.00%	0.00%	9.09%	0.00%	1.02%
high-glycemic index	0.00%	0.00%	0.00%	9.09%	0.00%	0.51%
fatty/red meat	2.22%	0.00%	0.00%	0.00%	0.00%	0.51%
dairy	0.00%	0.00%	0.00%	0.00%	6.25%	0.51%
fried/fatty	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
lean/white meat	4.44%	2.78%	4.65%	18.18%	31.25%	0.00%
eggs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
shellfish	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
caffeine	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
spicy	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
drugs	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
alcohol	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 4: Positive influencers of skin health. Of all food groups, fruits and vegetables and water were most frequently identified as positive influencers of skin health among those with acne, eczema, psoriasis, rosacea, and seborrheic dermatitis.

Food Category	Skin Conditions					Percent of selections
	Acne	Eczema	Psoriasis	Rosacea	Seborrheic Dermatitis	
fried/fatty	57.78%	50.00%	32.56%	54.55%	50.00%	33.03%
high-glycemic index	48.89%	30.56%	37.21%	54.55%	43.75%	28.44%
dairy	31.11%	8.33%	11.63%	9.09%	6.25%	11.01%
alcohol	4.44%	8.33%	16.28%	9.09%	12.50%	6.88%
fatty/red meat	8.89%	2.78%	9.30%	27.27%	12.50%	6.42%
caffeine	6.67%	5.56%	2.33%	9.09%	0.00%	3.21%
spicy	11.11%	2.78%	2.33%	0.00%	0.00%	3.21%
nuts, soy	0.00%	8.33%	0.00%	0.00%	12.50%	2.29%
shellfish	0.00%	8.33%	4.65%	0.00%	0.00%	2.29%
drugs	2.22%	0.00%	2.33%	0.00%	6.25%	1.38%
fruits and vegetables	0.00%	0.00%	4.65%	0.00%	0.00%	0.92%
eggs	0.00%	2.78%	0.00%	0.00%	0.00%	0.46%
vitamins and minerals	2.22%	0.00%	0.00%	0.00%	0.00%	0.46%
lean/white meat	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
unsaturated fats	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
antioxidants	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
probiotics	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
water	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 5: Negative influencers of skin health. Of all the food groups, fried/fatty foods and high-glycemic index foods were the most frequently identified as negative influencers of skin health among those with acne, eczema, psoriasis, rosacea, and seborrheic dermatitis.

RESULTS

- Most participants (83%) agreed that nutrition affects skin health, and there was no difference in distribution between those with skin conditions and those without.

- Participants with skin conditions and those who disagreed that nutrition affects skin more likely received their information from a reputable source.

- Fruits/vegetables was identified as the number one positive influencer of skin health across all 5 skin conditions.

- Fried/fatty and high-glycemic index foods were the top 2 food categories identified as negative influencers in each of the 5 respective skin conditions.

- Dairy was one of the top negative influencers (31%) identified among acne patients. Alcohol was considered a key negative trigger (16%) by psoriasis patients.

CONCLUSIONS

Patient perception on specific foods and nutrients reflect information that is currently available in the literature: generally, fried/fatty and high-glycemic index foods are bad, and fruits/vegetables are good for skin health. Clearly, scientific literature informs patient perception and public opinion. However, there is still no unified consensus among different studies. Even if there are substantial associations, mechanisms of action are still not well understood.

internet access and social media give people access to more information than ever before. Patients may already be avoiding certain foods or taking nutritional supplements before consulting their physicians, which is worrisome if their sources of information are not accurate. Given that adequate nutrition is crucial for healthy skin, it becomes important to assess patient perceptions. Extensive research on nutrition and skin health still needs to be done, but in the meantime our results help elucidate patient knowledge and will hopefully direct physicians in providing better patient-centered care.

REFERENCES

1. Piccardi N, Manissier P. Nutrition and nutritional supplementation: Impact on skin health and beauty. *Dermatoendocrinol*. 2009;1(5):271-274.
2. Rushton DH. Nutritional factors and hair loss. *Clin Exp Dermatol*. 2002;27(5):396-404.
9. Palmieri B, Vadalà M, Laurino C. Nutrition in wound healing: investigation of the molecular mechanisms, a narrative review. *J Wound Care*. 2019;28(10):683-693.
13. Cosgrove MC, Franco OH, Granger SP, Murray PG, Mayes AE. Dietary nutrient intakes and skin-aging appearance among middle-aged American women. *Am J Clin Nutr*. 2007;86(4):1225-1231.
21. Block SG, Valins WE, Caperton CV, Viera MH, Amini S, Berman B. Exacerbation of facial acne vulgaris after consuming pure chocolate. *J Am Acad Dermatol*. 2011;65(4):e114-e115.
30. Wu AG, Weinberg JM. The impact of diet on psoriasis. *Cutis*. 2019;104(2S):7-10.

ACKNOWLEDGEMENTS