

The Relationship of Diet and Acne

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ABSTRACT

Background: Earlier, medical literature replicated that diet was not a proven cause of acne. Nonetheless, studies in recent years have demonstrated a relation between certain dietary factors and acne. It is uncertain whether patients are aware of recent research findings.

Purposes: Acne patients were surveyed to explore beliefs concerning the relationship between diet and acne, to determine whether these beliefs translated into behavior change and to recognize health information sources.

Materials and Methods: Surveys were managed to 104 acne patients at King Abdulaziz Hospital from March 2016 till February 2017, with 98 completed in full and included in this analysis.

Results: of the 104 questionnaires administered, 98 were completed in full and were included in the analysis. The mean age of patients was 29 years (range, 15 to 45 years); 76 were female and 22 were male. Six respondents had an under-weight BMI of less than 18; 62 respondents had a normal BMI between 18–25; 26 respondents were overweight with BMI 25–30; and 4 respondents were qualified as obese with BMI greater than 30. A majority, (90 of 98) of respondents, was educated at the college level.

Conclusion: In this exploratory study, patients reported utilizing a diversity of information sources, a majority from the Internet. In those surveyed, there was a persistence of long-held belief that fried/greasy foods and chocolate may serve as acne triggers, and less belief in trigger foods supported by recent research, including refined carbohydrates and sugar. Given the multiplicity of beliefs and utilized sources among acne patients in our survey, there is a need to establish an up-to-date and reliable methods to educate patients the relationship between diet and occurrence of acne.

Keywords: acne, foods, diet, Internet, dermatologist.

INTRODUCTION

Research studies on the relationship between diet and acne goes back periods. In the 1960s, numerous research groups studied this subject, and one of the largest studies contains 65 patients. Over a month period, subjects were managed either a chocolate bar or a placebo bar, and no difference in acne severity was perceived^[1]. In regards to such studies, patients were advised that diet did not impact acne. This belief was reflected in textbooks, patient information brochures, and the medical literature^[2]. Nonetheless, later, researchers distinguished methodological flaws in the original study, comprising the fact that the placebo bar confined a comparable total sugar and fat content as the chocolate bar^[3]. Additional examinations have now correlated a number of dietary influences and acne. The strongest studies to date specify that dietary glycemic load might add to acne. A randomized controlled trial of Australian males^[4] showed significant improvement of acne severity after 3 months of adherence to a low-glycemic-load diet, compared to the high-glycemic-load diet control group.

Follow-up studies^[5,6] have distinguished that transferring to a low glycemic diet led to better insulin sensitivity, lower androgen bioavailability, and altered skin sebum production. It is not known, conversely, what role individual differences, period of dietary changes, and other influences play in this relationship. As a result, studies such as Di Landro et al.'s^[7] have documented the opposing view that weekly intake of cakes, sweets, and chocolate (foods high in glycemic load) were not related with a higher risk of acne.

Furthermore, researchers observing the relationship between dairy intake and acne have distinguished some relationship. Studies^[8,9] have showed this relationship in three separate populaces, however, in each occurrence the correlation outcomes were considered relatively weak. Closer assessment of this relationship discovered that only skim milk presented a statistically significant correlation with acne, conceivably as a result of its increased processing and/or declined estrogen content in comparison to whole milk^[9]. A number of other dietary factors have been studied for their prospective role in

improving acne. For instance, an inverse relationship has been found amid acne severity and intake of omega-3-rich fish [7, 10] with the mechanism of action postulated as omega-3-mediated reduction of inflammatory acne [11]. Whereas some promising results have been distinguished from in vitro - animal studies . Investigations on humans are limited, and each of these dietary factors necessitates additional research before recommendations could be considered for patients. These comprise foods or supplements comprising vitamin A, omega-3 fatty acids, zinc, antioxidants, and fiber [11].

Given that the scientific literatures on this topic are quickly developing, it would be predictable that patients may receive conflicting advice. Patients have large experience and beliefs about diet and acne, comprising the common perception that fried, greasy foods would lead to oily skin and acne. However, it is not known whether patients are aware of the research results that support a relationship amid specific dietary influences and acne. Patients look for and receive medical information from multiple sources, and present patient beliefs about diet and acne are not known.

This study was designed to be an initial, exploratory survey study of current patient perceptions about the relationship between diet and acne. The purpose was to identify common beliefs, misconceptions, and current information sources regarding the relationship between diet and acne. As in other exploratory survey studies [12], these findings would specify directions for future research and would be beneficially to clinicians when counseling patients.

MATERIALS AND METHODS

Patients presenting to King Abdulaziz Hospital for the management of acne or acne scarring were requested if they desired to participate in a survey study about the relationship between diet and acne. If so, they completed a self-administered questionnaire previous to the physician visit. Subjects were requested to categorize their acne from mild to severe, based on their personal

perception of the disease’s influence. Demographic information, for instance age, gender, weight, and height, was comprised in the questionnaire. Surveys were managed from March2016 to February 2017.

The study was done according to the ethical board of King Abdulaziz university.

RESULTS

Of the 104 questionnaires administered, 98 were completed in full and were included in the analysis. The mean age of patients was 29 years (range, 15 to 45 years); 76 were female and 22 were male. Six respondents had an under-weight BMI of less than 18; 62 respondents had a normal BMI between 18–25; 26 respondents were overweight with BMI 25–30; and 4respondents qualified as obese with BMI greater than 30. A majority, 90 of 98 respondents, was educated at the college level (Table 1).

Table 1. Sample characteristics.

Gender	N	%
Male	22	22,4%
Female	76	77,6%
Age		
15–19	10	10,2%
20–29	48	49,0%
30–39	34	34,7%
40–45	6	6,1%
BMI		
<18	6	6,1%
18–25	62	63,3%
25–30	26	26,5%
30+	4	4,1%
Education		
Below High school	2	2,0%
High school	6	6,1%
College+	90	91,8%

Respondents reported the following acne severity distribution: 26 patients had mild acne, 2 patient had mild-moderate, 58 patients had moderate, 2 had moderate-severe, and 10 had severe acne (Table 2).

Table 2. Self-reported acne severity

Mild	✓	✓			
Moderate		✓	✓	✓	
Severe				✓	✓
Total N = 98	26	2	58	2	10
%	26,5%	2,0%	59,2%	2,0%	10,2%

Amongst the population, patients overwhelmingly believed that diet could affect acne (Table 3). Only 6 of 76 (7.9%) female patients and 2 of 22 (9.1%) male patients believed that diet had no effect on acne. Of female patients, 60 of 76 (79%) patients believed that diet affected acne either somewhat, a lot, or was the complete cause of acne. Among male patients, results were similar: 20 of 22 (90.9%).

Table 3. Gender and belief that diet can affect acne

Not at all	Slightly	Some-what	A lot	Completely	
Male	2	0	12	6	2
Female	6	10	30	28	2
Total N = 98	8	10	42	34	4

A majority, 70 of 98 patients (71.5%), had changed their diets in order to help remedy from their acn. 26 of the 70 tried dietary changes before medications, compared to the 28 patients that first attempted medications. Of those 28, 18 tried over-the-counter medications first and 10 tried prescription first. Eight patients tried a combination of dietary changes with prescription medications; 4 combined dietary changes with over-the-counter medications; and the remaining tried a combination of all three or a combination of over-the-counter and prescription medications. The dietary item most frequently implicated to worsen acne was fried, greasy foods (71.4%). Other responses included chocolate (53.1%), followed by dairy products (46.9%). This was followed by soda drinks (34.7%), caffeine (26.5%), and refined carbohydrates (26.5%). Among the named categories of dietary items believed to aggravate acne, sugar was named by the lowest percentage of respondents (16.3%). A total of 10.2% of respondents listed other (Table 4).

TABLE 4. Dietary items believed by patients to aggravate acne

	N	%
Fried orgreasyfoods	70	71,4%
Chocolate	52	53,1%
Dairyproducts	46	46,9%
Soda drinks	34	34,7%
Caffeine	26	26,5%
Refinedcarbohydrates	26	26,5%
Spicyfoods	20	20,4%
Sugar	16	16,3%
Other	10	10,2%
N/A - diet aggravate acne	2	2,0%

The majority of respondents believed that certain foods or supplements could induce acne. A minority (27%) believed that food or supplements did not cause acne. The category listed by most respondents as helping in acne treatment was that of vitamin A (41%), followed by antioxidants (33%), fish/omega-3s (29%), and zinc (27%). Of respondents, a minority reported improvement with dietary changes. Twenty 4vpercent reported acne improvement with less fried or greasy foods, followed by 14% reporting improvement with less dairy products and 14% reporting improvement with less refined carbohydrates. The most widely utilized source of information was a Google search (49%), followed by dermatologist (43%) and then family members and TV (tied at 41%). Medical websites, specifically sites such as WebMD or that of the American Academy of Dermatology, were used by 31%, while primary care physician (PCP) was used by 18%. Respondents were split evenly between those satisfied with the information provided on their sources (49%) and those not satisfied (51%). This trend was found in almost all categories of sources listed except for: dermatologist, family members, medical websites, and PCP.

DISCUSSION

Respondents overwhelmingly believed that diet could influence acne. In fact, merely 5% of female patients and only 9% of male patients suggest that diet had no influence on acne. These are toughly held beliefs, in that they are translating to behavior change. A majority of respondents, 71%, had changed their diet in order to help in the remedy of their acne. Respondents overwhelmingly believed that foods could aggravate acne. Of the foods listed, the highest percentage of respondents (71%) chose a category that patients have historically described as an acne trigger food: that of fried/greasy foods. This is a popular, long-held belief, as anecdotally, patients sometimes make the connection between greasy foods and increased oil production on the face. Great evidences , nonetheless, supports a relationship between a high glycemic index (GI) diet and acne ^[13]. Though fried or greasy foods might subsidize to a high GI diet, would sugar, soda drinks, and refined carbohydrates. These classifications, conversely, were listed by much lower percentages of respondents (16%, 35%, and 27%, respectively). This is a vital point to highlight to our patients. Although fried, greasy foods are a apprehension, so are a number of other foods. As dermatologists, we ought to highlight that even innocuous foods, for instance, pasta,

white bread, and other refined carbohydrates, when part of an overall high GI diet, can worsen acne.

Chocolate was likewise distinguished by a majority of respondents (53%). Chocolate as a dietary factor triggering acne is similarly a long-held belief, and studies assessing its role in acne were performed in the 1960s^[14]. At this time, however, there is no indication that a factor specific to chocolate can trigger acne. Relatively, research points to its sugar content and influence to a high GI diet as a possible trigger. Preferably, sugar, chocolate, and advanced carbohydrates would have related ratings by patients, as they can all contribute to a high GI index diet. Our results specify that this is not the case. Truthfully, although 53% reported chocolate as a possible trigger food, only 16% reported sugar as a potential trigger. This is another area in which dermatologists should counsel patients. While chocolate bars can serve as an acne trigger, sugar and other sugary foods are just as concerning. Notable, even though some studies have shown a relationship to dairy^[13], less than half (47%) of our respondents believed that dairy products could aggravate acne. There are limited investigations performed in the area of foods or supplements that can help in the management of acne, many of our respondents considered that they can help. In a period of quick distribution of information, patients are occasionally made conscious of favorable findings from small studies. This highlights the need for dermatologists to stay abreast of the latest dietary findings, and in precise not to discharge these out of hand. Furthermore, dermatologists should be familiar of the information that a significant proportion of patients can believe that certain foods or supplements have the ability to combat acne, and consequently must be able to provide information on the restricted evidence that exists to support their use.

With the purpose of spread accurate, evidence-based information, we need to review which sources patients receive their medical information. In our survey study, less than half (43%) depends on dermatologists for information. The rest respondents turned to a diversity of sources, containing the Internet (Google search and medical websites), mass media (magazines, television, and newspaper), and personal relationships (mainly family members and friends). Therefore, the sources of information received by patients have changed considerably. In a study think about from 1999, general data on skin break out was acquired most

of the time from family doctors (71%)^[15]. In the present study, just 18% used their essential care doctor as a wellspring of data. The mass media remains to play a role in providing health information. In the 1999 survey study, magazines and television were utilized by 44% each^[15]. In the present survey study, magazines were utilized by 27%, and television was utilized by 41% of respondents. Unmistakably the Internet has significantly affected wellbeing data looking for conduct. What is less evident is the way doctors should react to this change while teaching our patients. In this investigation, a greater number of patients got data from the Internet than from their essential care doctor or their dermatologist. In any case, a noteworthy number of those happy with their eating routine and skin inflammation instruction had checked PCP (25%) or dermatologist (75%) as one of their wellsprings of data. On the other hand, the greater part of respondents were not happy with their data sources did not stamp dermatologist or PCP as a wellspring of data (86%). In this manner, with such a large number of skin break out patients rolling out dietary improvements, and a significant number of them swinging to the Internet seeking for data to direct them, it turns out to be considerably more basic that doctors be instructed on the point of skin break out and slim down and have the capacity to fill in as a definitive source. For those patients who look for additional data, we likewise should have the capacity to allude patients to tenable wellsprings of online health data, with particular proposals for high caliber, progressive wellbeing data sites. Our examination proposes that training from doctors and restorative sites is associated with higher fulfillment in patients. In conclusion, we want to confirm that health education materials are definitely accessible on the Internet and that such information is accurate, evidence-based, free from commercial bias, and reflective of the most current research findings.

CONCLUSION

This survey study aimed at exploring patient beliefs regarding the relationship between diet and acne. In this small sample, the overwhelming majority of respondents believed that diet could affect acne. This belief impacted behavior, as the majority had changed their diets in order to improve their acne. As a result of the study design, the results from this patients sample cannot be useful to the general populace. Nonetheless, even in this highly educated patient populace, there was a perseverance of long-held

beliefs that assured foods might serve as acne triggers (i.e., fried or greasy foods and chocolate) and less recognition of the foods that research has recognized as potential triggers (i.e., sugars, refined carbohydrates, and dairy). Many respondents similarly reported a belief that certain foods or supplements could help acne, an area with some promising preliminary results but one that requires further examination before any conclusions might be drawn.

These findings specify a need for additional study on the best practices in providing health information, particularly as medical recommendations are developing. Our populace was highly educated, and the majority was of normal weight. Additional research in this area should target a more diverse populace. Even within this skewed population, nonetheless, we distinguished extensively conflicting beliefs between acne patients. There is a clear requirement for easily obtainable, evidence-based, and up-to-date information on the relationship between diet and acne.

REFERENCES

1. **Fulton JE, Plewig G, Kligman AM(1969):** Effect of chocolate on acne vulgaris. *JAMA.*, 210:2071–4.
2. **Rosenberg EW, Kirk BS(1981):** Acne diet reconsidered. *ArchDermatol.*,117(4):193–5.
3. **Goh W, Kallianpur KJ, Chow D *et al.*(2011):** Chocolate and acne: how valid was the original study? *ClinDermatol.* ,29(4):459–60.
4. **Smith RN, Mann NJ, Braue A, Makelainen H, Varigos GA(2007):** The effect of a high-protein, low glycemic-load diet versus a conventional, high glycemic-load diet on biochemical parameters associated with acne vulgaris: a randomized, investigator-masked, controlled trial. *J Am AcadDermatol.* ,57:247–56.
5. **Smith RN, Braue A, Varigos GA, Mann NJ(2008):** The effect of a low glycemic load diet on acne vulgaris and the fatty acid composition of skin surface triglycerides. *J DermatolSci.*,50(1):41–52.
6. **Smith RN, Mann NJ, Makelainen H, Roper J, Braue A, Varigos GA(2008):** A pilot study to determine the short-term effects of a low glycemic load diet on hormonal markers of acne: a nonrandomized, parallel, controlled feeding trial. *Mol Nutr Food Res.*,52:718–26.
7. **Di Landro A, Cazzaniga S, Parazzini F *et al.*(2012):** Family history, body mass index, selected dietary factors, menstrual history, and risk of moderate to severe acne in adolescents and young adults. *J Am AcadDermatol.*,67(6):1129–35.
8. **Adebamowo CA, Spiegelman D, Berkey CS *et al.*(2008):** Milk consumption and acne in teenaged boys. *J Am AcadDermatol.* , 58(5):787–93.
9. **Adebamowo CA, Spiegelman D, Danby FW *et al.*(2005):** High school dietary dairy intake and teenage acne. *J Am AcadDermatol.*,52(2):207–14.
10. **Jung JY, Yoon MY, Min SU *et al.*(2010):** The influence of dietary patterns on acne vulgaris in Koreans. *Eur J Dermatol.*,20(6):768–72.
11. **Bowe WP, Joshi SS, Shalita AR(2010):** Diet and acne. *J Am AcadDermatol.*,63(1):124–41.
12. **Borup G, Mikkelsen KL, Tønnesen P, Christrup LL(2015):** Exploratory survey study of long-term users of nicotine replacement therapy in Danish consumers. *Harm Reduc J.*, 12:2.
13. **Spencer EH, Ferdowsian HR, Barnard ND(2009):** Diet and acne: a review of the evidence. *Int J Dermatol.*,48(4):339–47.
14. **Anderson PC(2001):** Foods as the cause of acne. *American Family Physician*,3:102–3.
15. **Tan JKL, Vasey K, Fung KY(2001):** Beliefs and perceptions of patients with acne. *J Am AcadDermatol.*,44:439–45.