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A cross-sectional study to assess the incompatible dietary behavior of patients suffering from skin diseases: A pilot study



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ABSTRACT

Background: Ayurveda implies the importance of diet and dietary habits in various human diseases. Confirmatory evidence regarding role of diet and dietary practices in diseases of skin are lacking.

Objectives: To assess incompatible dietary behavior in acne, psoriasis, fungal infections, and vitiligo patients using a questionnaire tool.

Materials and methods: A questionnaire-based, cross-sectional case control study was conducted in the skin out-patient department of a tertiary care hospital. Patients were enrolled in each diseased group and their control groups. Perception of patients regarding the role of diet in skin diseases was evaluated. Study participants were subjected to 2 validated questionnaires to assess consumption of incompatible diet and incompatible dietary habits.

Results: Diet was perceived to be more important in patients of acne compared to their controls ($P < 0.05$). Mean composite score regarding the assessment of consumption of incompatible diet of acne (19.594 ± 4.613 vs. 16.719 ± 3.457 , $P = 0.006$) and psoriasis (17.531 ± 2.688 vs. 16.281 ± 2.630 , $P = 0.0497$) patients was higher than their controls. Mean composite score regarding assessment of incompatible dietary habits was higher in acne (19.031 ± 4.589 vs. 15.688 ± 4.645 , $P = 0.0054$), psoriasis (18.875 ± 5.014 vs. 15 ± 3.069 , $P = 0.0009$), and fungal infection (16.469 ± 3.538 vs. 14.5 ± 2.627 , $P = 0.0115$) patients compared to controls. Mean composite scores of both the questionnaires in vitiligo patients were similar to controls.

Conclusion: Scores for consumption of incompatible diet and dietary habits were found to be higher in acne and psoriasis patients compared to controls. Patients with fungal infections had higher scores for the presence of incompatible dietary habits but similar scores for the consumption of incompatible diet, whereas both scores in patients of vitiligo were similar to controls.

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1. Introduction

Association between dietary pattern and diseases has always been a field of interest among the health professionals. A number of diseases such as depression, chronic obstructive pulmonary disease, and obstructive sleep apnea have been found to be significantly affected by the dietary pattern of the patients [1–3]. Similarly, some skin disorders have been studied for their association with the dietary pattern of the patients. A positive association between the dietary pattern and skin diseases such as squamous cell carcinoma of the skin has been shown by Ibiebele et al. [4] Cui et al. studied the

dietary pattern in Korean children with atopic dermatitis and found that lower nutrient intake is associated with increased severity of atopic dermatitis [5]. Pierce et al. proved that diet-rich in gourds and root vegetables significantly reduces the skin lesions owing to arsenic exposure [6]. However, comparative studies between the diseased and healthy subjects regarding the dietary pattern and skin diseases have never been studied. Moreover, the concept of incompatible diet has not been explored in modern medicine.

Ayurveda states, diet (*Aahar*), sleep (*Nidra*), and abstinence (*Brahmacharya*) as the three absolute factors responsible for the maintenance of good health, physical strength, vitality of the skin and body [7].

Diet is an important part of our day-to-day life. Ayurveda mentions the appropriate diet for daily consumption and in persons with and without diseases. Diet which predisposes an individual to

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diseased states and cannot provide benefits to the human body is unfit for human consumption and is termed as “unhealthy diet” [8]. This unhealthy diet can be due to the intake of incompatible dietary items as per Ayurveda or incompatible dietary mannerisms. Incompatible diet forms an integral part of unhealthy diet. Ancient texts define an incompatible diet (*Virudhdha-aahara*) when the food constituents in the preparation are in wrong combination, have been subjected to under or over-processing or if the food preparation is consumed in inappropriate quantities, and/or at an incorrect period of the day and/or in the wrong season [8].

Two or more healthy food constituents when mixed can cause effects to the body which might be unhealthy. Such a diet is termed as combination incompatible diet (*Sanyoga-virudhdha-aahara*) [9]. Charaka and Sushruta Samhita have mentioned a number of incompatible diet preparations. Charaka stated that milk should be avoided along with diet which is sour in taste such as fermented food items (e.g., *kanji, idli, medu wada, dhokla*, etc.), fruits (e.g., *amla, banana, pineapple, pomegranate*, etc.), curd, butter-milk, rock salt, fish, etc. [9,10].

Ancient ayurvedic texts such as *Vimana Sthana* of Charaka Samhita, have laid down rules or habits which should be followed when a diet has to be consumed, for example, it is inappropriate to eat very fast or very slow or talking too much while eating, etc. [9,10] Neglecting these rules while consuming the diet are termed as incompatible dietary mannerisms (*Vidhi-virudhdha-aahara*), which is responsible for many unhealthy outcomes over the body. Over the years, with the progress achieved by the humans, many new habits have been acquired by the people while eating which are considered to be wrong, for example, watching television, talking on a cellphone, standing, etc., while eating.

Ayurveda states that the consumption of incompatible diet is an important factor causing a number of skin diseases such as acne and vitiligo. Very few studies have associated such skin diseases with consumed diet. However, the data regarding this association are lacking, especially in the Indian population. A survey in Australia showed that, 30% of medical students believed that unhealthy diet might be a causative factor for acne [11]. Smith et al. observed that the low glycemic, non-Westernized diet is beneficial in acne [12]. Nutrition/diet has been shown to affect skin diseases such as vitiligo and psoriasis [13,14].

In view of this background, the type of diet consumption among the patients with common skin diseases was assessed to study the pattern of incompatible diet/dietary mannerisms in comparison to the dietary habits of healthy individuals. The skin diseases focused in this study were selected on their basis of prevalence in the Indian setting and/or the disease has been hypothesized to be associated with abnormal diet. Based on these criteria, the authors selected four diseases namely acne, psoriasis, vitiligo, and fungal infection. Fungal infection is the second most common acquired skin disease next to allergic skin diseases [15]. Psoriasis and vitiligo have a high prevalence among the skin disease patients with a point prevalence of 8% and 9.98%, respectively, in a hospital-based study [16]. Acne is an universal skin disease with Indian incidence of 50.6% in boys and 38.6% in girls [17].

This study was conducted to find out the prevalence of presence of consumption of incompatible diet and incompatible dietary habits, collectively both (for the purpose of the study) called as incompatible dietary behavior, among the people with common skin diseases (acne, psoriasis, fungal infection, and vitiligo) in comparison to healthy controls.

2. Materials and methods

This was a cross-sectional, questionnaire-based case control study conducted in skin out-patient department (OPD) in a tertiary

health care Hospital in Mumbai from January 2014 to June 2014. Permission from the Institutional Ethics Committee was obtained (EC/OA-113/2013). An informed consent was obtained from the participants of the study.

2.1. Study sample

Patients of age group 18–60 years of either sex attending the dermatology OPD of KEM Hospital were included in the study. Patients suffering from any one of the confirmed diseases namely acne, psoriasis, vitiligo, and fungal infection with a duration of maximum of 6 months were selected. The total number of patients (i.e., Group 1) to be enrolled was 128 which was stratified on the basis of the disease in 1:1:1:1 to have 32 patients in each disease strata: acne, psoriasis, vitiligo, and fungal infection. Literate patients, who could read and write in any language, were included in the study. Patients who were pregnant and lactating (as they are advised special high-fat diet), and those advised special diet due to medical condition/ayurvedic treatment were excluded from the study.

Age- and sex-matched 32 healthy individuals (devoid of any disease and not on any medication) per strata were selected to serve as controls. Both cases and controls with any other medical conditions, on ayurvedic treatment, advised special diet, pregnant and lactating females were excluded from the study.

2.2. Assessment tool: Questionnaire

The participants (both cases and controls) in the study were subjected to 2 questionnaires regarding their dietary habits. The questionnaires were prepared based on the rules stated for the dietary habits by the ancient ayurvedic texts such as the Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya. The questionnaires were developed in English. The questionnaires were filled by the investigator after asking questions to the patients in their local language.

2.3. Validation of the questionnaires

Content validity was done for the 2 questionnaires used in the study. The questionnaires were subjected to 6 ayurvedic experts and 6 dermatologists for validation. Rate of agreement for the items in the questionnaire was 0.6.

Questionnaire 1 [Table 1] entitled, “Assessment of extent of consumption of combination incompatible diet” in cases and controls. It comprised 13 closed-ended questions and the response to the items in the questionnaire were scored as per the Likert scale (1–5), where 1 = never and 5 = always. The minimum score for Questionnaire 1 was 13, which represented no consumption of combination incompatible diet and the maximum score was 65, which represented highest consumption of incompatible diet by an individual.

In the Questionnaire 1, Q1–4 and Q11–12 were related to consumption of foods that are to be avoided with hot beverages/drinks. Q5–Q10 focused on consumption of milk and milk products along with food that should have been avoided when consumed together. Q13 was noted if any other food combinations which were incompatible were consumed.

Questionnaire 2 [Table 2] entitled, “Assessment of the incompatible dietary habits/mannerisms” in cases and controls. It comprised 8 closed-ended questions and the response to the items in the questionnaire were scored as per the Likert scale (1–5), where 1 = never and 5 = always. The minimum score for Questionnaire 2 was 8, which indicated the absence of incompatible dietary habits whereas the maximum score was 40, which indicated the presence of all incompatible dietary habits.

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