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DIETARY PRACTICES RELATED TO VIRUDDHAHARA AND SELF-REPORTED SYMPTOMS: A CROSS-SECTIONAL SURVEY

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ABSTRACT

Viruddhahara describes dietary combinations and practices regarded as incompatible in Ayurveda. Objective: To describe selected Viruddhahara-related dietary practices and self-reported symptoms among adults. Methods: A questionnaire-based cross-sectional survey used a structured 22-item questionnaire. The final analysis included 1,000 adults aged 18 years and above. Data were summarized descriptively. Results: Participants were aged 18–88 years (mean, 39.96 years). Irregular meal timing was reported by 41.9%, and 27.4% consumed food after 10 PM occasionally or always. Curd with fish curry was reported by 20.1%, curd with chicken biriyani by 65.2%, and selected fruit–milk combinations by 31.4%. Reheating refrigerated food occasionally or always was reported by 71.2%, and reuse of cooking oil by 31.0%. Discomfort after selected dietary combinations was reported by 5.9%; gastrointestinal complaints predominated in the free-text descriptions. Self-reported food allergy was noted by 13.8% but was not clinically verified. Conclusion: Several selected dietary practices were common in this convenience sample, whereas fewer participants reported discomfort. These descriptive findings cannot establish causal relationships between dietary practices and symptoms.

KEYWORDS: Viruddhahara, dietary practices, incompatible diet, Ayurveda, self-reported symptoms, cross-sectional survey

INTRODUCTION

In the context of Ayurveda, *Ahara* (diet) is regarded as one of the key determinants for health and disease. According to the Ayurvedic dietary system, there are various factors apart from the nutritive value of food materials which influence the appropriateness of a food material. Some of the factors include its quantity, mode of preparation and processing, time, digestion, habituation, and combination with other food materials. In this context, *Viruddhahara* refers to dietary substances, combination, or practice regarded as incompatible due to various factors concerning their inherent characteristics, combination, processing, quantity, time, or mode of consumption.[1,2]

Various types of incompatibility of diet have been described in the classical texts of Ayurveda. The *Charaka Samhita* has elaborated on the concept of incompatibility based on factors like place, time, digestion,

quantity, habituation, processing, potency, sequence, and food combination.[1] There are also some specific combinations described in Ayurvedic texts, and fish with milk is one among the common examples mentioned. Thus, *Viruddhahara* is a wider term compared to the combination of two incompatible food materials.[1,2]

Modern dietary habits have evolved greatly due to changes in lifestyle, working pattern, availability of foods, and food storage and preparation. Unusual food intake timings, night-time food intake, restaurant food, storing and reheating of prepared foods, repeated heating of cooking oil, and different combinations of foods intake have become increasingly common dietary habits. Some of the dietary habits and food combinations might be similar to the ones explained by the concept of Viruddhahara in Ayurveda. Hence, it is important to record them in contemporary adults before studying any potential consequences.

Some other aspects of such dietary habits are being studied separately in modern nutritional science as well. Timing of meals is under consideration due to interactions between food intake and the circadian regulation of metabolism.[3,4] Likewise, repeatedly heated edible oils might cause thermal degradation and lipid oxidation, generating oxidation products.[5,6,7] Modern observations cannot be taken as explanation of the concept of *Viruddhahara*. But they show the importance of such topics as food intake timing, processing, and consumption methods for scientific study.

While there are plenty of descriptions of Viruddhahara in Ayurveda, there is insufficient data about the occurrence of such dietary practices among modern adults. Moreover, it would be interesting to learn if individuals feel some kind of discomfort after consuming particular combinations of food and which symptoms they experience. The information can help to identify common dietary practices that need to be studied further in greater detail.

It should be noted that observations obtained from questionnaires have to be interpreted carefully. A cross-sectional survey can provide information about dietary practices and experiences of respondents but cannot prove that certain food combination and practice led to the reported symptoms. Symptoms experienced can be affected by many other dietary, individual, environmental, and health factors. That is why the current study can be considered descriptive.

The main goal of the current research is to describe dietary practices related to Viruddhahara and to document the self-reported symptoms after particular dietary combinations and practices among adults. Common practices and self-reported symptoms of respondents can provide preliminary information needed for selecting relevant dietary exposure for future analytical, experimental, and clinical studies.

MATERIALS AND METHODS

Study Design

A questionnaire-based cross-sectional survey was conducted to assess dietary practices related to *Viruddhahara* and self-reported symptoms following selected dietary combinations and practices.

Study Population

Adults aged 18 years and above were considered for the present analysis. Responses from individuals below 18 years and responses in which a valid adult age could not be established were excluded. The final analytical sample consisted of **1,000 adult respondents.**

Questionnaire Development

A structured questionnaire consisting of 22 questions was developed to collect information regarding demographic characteristics, general dietary habits, food-consumption patterns, selected dietary combinations relevant to Viruddhahara, and self-reported symptoms. The 22 questionnaire items are reproduced in Appendix 1.

The questionnaire contained questions on food eaten in restaurants, regularity of timing of meals, number of meals per day, eating very late, gap between the time of having dinner and going to sleep, taking curd with fish curry, taking curd with chicken biriyani, reheating of refrigerated food, reuse of old cooking oil, intake of selected fruits with milk, using curd as marinade of chicken, intake of milk products after fish, taking curd at night and symptoms following selected food combinations. They were also asked whether they suffer from food allergy or not, and if so, what kind of food.

Questionnaire Validation

The questionnaire underwent expert review as part of the questionnaire-development and validation process. Reliability was assessed using item-total analysis. Corrected item-total correlations ranged from 0.131 to 0.970, while Cronbach's alpha values when individual items were deleted ranged from 0.948 to 0.959. The questionnaire was subsequently used for data collection.

Data Collection

The questionnaire was circulated electronically using an online survey form. Responses were collected electronically and compiled for analysis. For the present study, the analytical dataset was restricted to 1,000 respondents aged 18 years and above.

Data Processing

The dataset was checked for completeness and consistency before analysis. Duplicate questionnaire fields generated in the survey export were consolidated after checking the corresponding responses. Age entries were standardized where a numerical age could be clearly identified. Responses from participants below 18 years were not included in the final analytical dataset.

Free-text responses describing symptoms were reviewed descriptively and grouped according to the nature of the complaints reported. Because an individual respondent could describe more than one symptom, symptom categories were considered non-mutually exclusive.

Statistical Analysis

Descriptive statistics were used for analysis. Categorical variables were expressed as frequencies and percentages. Age was summarized using mean, median and range. Free-text symptom responses were descriptively categorized. No inferential analysis was undertaken to establish causal relationships between dietary practices and reported symptoms.

RESULTS

Characteristics of the Study Population

A total of 1,000 adults aged 18 years and above were included in the final analysis. Participants ranged in age from 18 to 88 years**,** with a mean age of 39.96 years and a median age of 38 years**.**

The largest age group was 31–40 years, comprising 367 respondents (36.7%), followed by 18–30 years with 257 respondents (25.7%). A further 177 respondents (17.7%) were aged 41–50 years, 100 (10.0%) were aged 51–60 years, 71 (7.1%) were aged 61–70 years, and 28 (2.8%) were above 70 years.

Table 1. Age distribution of study participants

Age group	Number (n)	Percentage (%)
18–30 years	257	25.7
31–40 years	367	36.7
41–50 years	177	17.7
51–60 years	100	10.0
61–70 years	71	7.1
>70 years	28	2.8
Total	**1,000**	**100.0**

General Dietary Practices

Regular meal timing was reported by 581 respondents (58.1%), whereas 419 (41.9%) reported that they did not consume food at regular times**.**

Regarding late-night food or snacks after 10 PM, 311 respondents (31.1%) reported never doing so, 415 (41.5%) reported doing so rarely, 208 (20.8%) occasionally and 66 (6.6%) always. Thus, 274 respondents (27.4%) reported late-night eating occasionally or always**.**

Most participants reported consuming three meals per day (66.5%), while 24.8% consumed four meals, 7.4% consumed two meals and 1.3% reported consuming five meals per day.

With regard to the interval between dinner and sleep, 41.5% reported going to bed approximately two hours after dinner, 33.7% approximately one hour after dinner, 22.8% within 15 minutes to one hour, and 2.0% soon after dinner.

Selected Food Combinations

Consumption of curd with fish curry was reported by 201 respondents (20.1%)**,** while 706 (70.6%) did not follow this practice and 93 (9.3%) identified themselves as vegetarian for this item. Curd with chicken biriyani was reported by 652 respondents (65.2%). A total of 244 (24.4%) did not consume the combination, while 104 (10.4%) identified themselves as vegetarian. Consumption of jackfruit, lemon or mango mixed with milk was reported by 314 respondents (31.4%), whereas 686 (68.6%) reported that they did not consume these combinations. Chicken marinated with curd was consumed always by 52 respondents (5.2%), occasionally by 290 (29.0%), rarely by 218 (21.8%) and never by 336 (33.6%); 104 (10.4%) identified themselves as vegetarian. Thus, 342 respondents (34.2%) reported consuming chicken marinated with curd occasionally or always**.** Following fish meals, consumption of milk products such as payasam, ice cream or peda was reported

always by 18 respondents (1.8%), occasionally by 276 (27.6%), rarely by 338 (33.8%) and never by 267 (26.7%); 101 respondents (10.1%) identified themselves as vegetarian. Accordingly, **294 respondents (29.4%) reported consuming milk products after fish occasionally or always.**

Food Processing Practices

Reheating refrigerated food was common. A total of 496 respondents (49.6%) reported reheating refrigerated food occasionally and 216 (21.6%) always, while 216 (21.6%) did so rarely and 72 (7.2%) never. Overall, **712 respondents (71.2%) reheated refrigerated food occasionally or always.**

Reuse of cooking oil previously used for cooking was reported always by 36 respondents (3.6%) and occasionally by 274 (27.4%). A further 311 (31.1%) reported doing so rarely, while 379 (37.9%) never reused cooking oil. Thus, **310 respondents (31.0%) reported reusing cooking oil occasionally or always.**

Table 2. Selected dietary practices among participants

Dietary practice	Relevant response	n	%
Irregular meal timing	No regular timing	419	41.9
Late-night food/snacks after 10 PM	Occasionally/Always	274	27.4
Curd with fish curry	Yes	201	20.1
Curd with chicken biriyani	Yes	652	65.2
Reheating refrigerated food	Occasionally/Always	712	71.2
Reuse of previously used cooking oil	Occasionally/Always	310	31.0
Jackfruit/lemon/mango mixed with milk	Yes	314	31.4
Chicken marinated with curd	Occasionally/Always	342	34.2
Milk products following fish	Occasionally/Always	294	29.4
Curd at night	Occasionally/Always	241	24.1

Use of Curd at Night

Regarding consumption of curd at night, 458 respondents (45.8%) reported never consuming it, 301 (30.1%) rarely, 218 (21.8%) occasionally and 23 (2.3%) always. Therefore, 241 respondents (24.1%) reported consuming curd at night occasionally or always**.**

The follow-up question regarding symptoms after consuming curd at night was answered by respondents for whom a response was recorded. Among these responses, 23 participants reported experiencing symptoms. As this was a conditional follow-up item, the result was interpreted using the available responses rather than treating unanswered entries as negative responses.

Self-Reported Symptoms Following Selected Dietary Combinations

Participants were asked whether they had experienced discomfort following selected food combinations or practices including chicken biriyani with curd, fish with curd, curd at night, tandoori chicken and parotta with beef. Fifty-nine respondents (5.9%) reported having experienced symptoms**,** while 837 (83.7%) responded negatively and

104 (10.4%) identified themselves as vegetarian for this question.

Among respondents who provided written descriptions, gastrointestinal complaints were prominent. Reported experiences included bloating, abdominal heaviness or fullness, acidity or heartburn, indigestion, gas, abdominal or stomach pain, loose stools and reduced appetite. A smaller number of responses described complaints such as cough, breathing difficulty, tiredness, skin rash or itching and sleep disturbance. These descriptions represent participants' self-reported experiences and do not establish a causal relationship between the food combinations and symptoms.

Self-Reported Food Allergy

A total of 138 respondents (13.8%) reported having an allergy to one or more food items, while 862 (86.2%) reported no food allergy. The responses were self-reported and were not confirmed through clinical examination, skin-prick testing or food-specific immunoglobulin E assessment. Consequently, these responses should be interpreted as participants' perception or history of food allergy rather than clinically confirmed food allergy.

DISCUSSION

The present study provides a descriptive assessment of dietary practices relevant to the Ayurvedic concept of *Viruddhahara* among 1,000 adults and documents self-reported symptoms following selected dietary combinations. Several of the practices examined were frequently observed in the study population. Particularly notable were reheating of refrigerated food, consumption of curd with chicken biriyani, irregular meal timing, consumption of selected fruits with milk, chicken marinated with curd, reuse of cooking oil, and late-night eating. These findings indicate that dietary behaviours considered relevant for investigating *Viruddhahara* continue to occur in contemporary food practices.

Irregular meal timing was reported by 41.9% of respondents, while 27.4% reported consuming food or snacks after 10 PM occasionally or always. Ayurveda gives importance not only to the nature and quantity of food but also to the appropriate time and manner of its consumption. Contemporary research has independently recognized meal timing as an important component of metabolic regulation because food intake interacts with circadian rhythms and physiological processes.[3,4] Nevertheless, the present findings do not establish that irregular or late-night eating produces a particular health outcome. They demonstrate that timing-related dietary behaviours are sufficiently common to merit more focused investigation.

Among the selected food combinations, curd with chicken biriyani was particularly common and was reported by 65.2% of respondents. Curd with fish curry was reported by 20.1%, while 31.4% reported consuming jackfruit, lemon, or mango mixed with milk. Chicken marinated with curd occasionally or always was reported by 34.2%, and 29.4% reported consuming milk products after fish occasionally or always. The frequency of these practices demonstrates that several combinations selected on the basis of the *Viruddhahara* framework are encountered in current dietary

behaviour rather than existing only as classical dietary descriptions.

The higher prevalence of curd with chicken biriyani is worthy of special mention. The popularity of any combination of foods in the modern-day food culture is no guarantee for either its safety or dangers from the point of view of Ayurveda. Similarly, the determination of any activity being Viruddhahara is not an indicator of the occurrence of instantaneous results following it. There could be other factors such as quantity, regularity of consumption, preparation, digestion capability of the individual, habituation, and foods consumed along with it. It is also noteworthy that some of the above-mentioned factors were not captured by the survey.

The practice of food-processing was another significant finding from the study. The practice of reheating refrigerated food either sometimes or all the time was noted in 71.2% of individuals surveyed, being one of the most common food processing practices observed in the study. Food processing practice of reusing previously used cooking oil sometimes or all the time was found in 31.0%. It is now well-known in modern food science that repeated heating, especially of oils under higher temperature, results in oxidation, hydrolysis and other kinds of chemical reactions and produces oxidized lipids.[5,6,7] Such observations give a scientific rationale to study the biochemistry of repeated food processing practices. However, such findings should not be taken as a direct proof of Ayurvedic principles like *Samskara Viruddha*. Rather, it provides an opportunity for exploring a possible area of research.

Yet another interesting observation is that there was a discrepancy between the prevalence of certain dietary behaviors and their proportion to the number of people having certain symptoms. Even though some chosen dietary behaviors were quite common among the respondents, only 5.9% of the entire sample experienced discomfort after consuming the chosen food combinations. This observation is of high significance for interpreting the results of the survey. This finding indicates that the presence of a particular dietary practice was not necessarily accompanied by an immediate self-reported adverse effect.

A number of reasons might explain why some individuals rarely report such symptoms. These include differences between people in terms of the amount and frequency of intake of the specific combination, level of acclimatization to the food, digestive ability, other dietary elements, and perception of the symptoms. Any dietary influences, if any, may not necessarily result in a symptom that could easily be traced back to a specific meal. The present study has not been carried out with the aim of establishing the mechanisms involved in any dietary influences. Therefore, the absence of immediate self-reported symptoms should not be interpreted as evidence that these practices are either safe or harmful; objective analytical and clinical investigations are required to evaluate their potential effects.

Among respondents who described symptoms, gastrointestinal complaints were prominent. Bloating, abdominal heaviness or fullness, acidity or heartburn, indigestion,

gas, abdominal pain, loose stools, and reduced appetite were among the experiences reported. A smaller number of participants described respiratory, cutaneous, and other complaints. These findings provide useful descriptive information, but the symptoms are non-specific and may occur due to numerous causes. Since the study did not establish precise temporal relationships, exclude other foods consumed during the same meal, or clinically evaluate the respondents, no individual symptom can be attributed specifically to a *Viruddhahara*-related combination on the basis of this survey.

Curd consumption at night was reported occasionally or always by 24.1% of respondents. Only a small proportion of the available follow-up responses described symptoms following nighttime curd consumption. Some written responses included throat or respiratory complaints. These observations may be relevant for generating research questions, particularly because timing of consumption forms part of the broader Ayurvedic approach to dietary suitability. Nevertheless, the present findings are exploratory and do not demonstrate that night time curd consumption caused the reported complaints.

Self-reported food allergy was recorded in 13.8% of respondents. This finding also requires cautious interpretation because the survey recorded participants' own perception or history of food allergy rather than a clinically established diagnosis. Self-reported reactions to food may include true immunological allergy as well as food intolerance and other adverse reactions. Previous population-based research in India has demonstrated differences between reported food reactions, sensitization, and probable food allergy when objective assessment is incorporated.[8,9] Therefore, the figure observed in the present study should not be interpreted as the prevalence of clinically confirmed food allergy.

Strengths and Limitations

A major strength of the study is the relatively large sample of 1,000 adult respondents and the assessment of a broad range of dietary behaviors rather than a single food combination. The questionnaire also allowed participants to describe symptoms in their own words, providing additional exploratory information beyond fixed-response items.

The study has several limitations. It was cross-sectional and questionnaire-based, and therefore depended on participant recall and self-report. The survey did not quantify the amount of each food consumed or precisely determine the frequency and duration of every dietary exposure. The presence of a dietary practice and the reporting of a symptom cannot establish a causal relationship. Free-text symptom descriptions were heterogeneous and were analysed descriptively. Food allergy was based entirely on self-report and was not clinically confirmed. The electronically circulated survey represents a convenience sample and therefore may not be representative of the wider population. In addition, the study did not undertake inferential testing of associations between individual dietary practices and symptoms. These limitations should be considered while interpreting the findings.

CONCLUSION

The present cross-sectional survey demonstrates that several dietary practices relevant to the Ayurvedic concept of *Viruddhahara* are present among adults. Consumption of curd with chicken biriyani, reheating of refrigerated food, irregular meal timing, consumption of selected fruits with milk, reuse of cooking oil, chicken marinated with curd and late-night eating were among the observed practices. Despite the frequency of some of these dietary behaviours, only 5.9% of respondents reported symptoms following the selected food combinations, with gastrointestinal complaints predominating among the descriptions provided. Self-reported food allergy was reported by 13.8% of participants but was not clinically verified. The findings should therefore be regarded as descriptive and hypothesis-generating rather than evidence of causation. They provide a population-level basis for selecting dietary practices and food combinations for further analytical, experimental and clinical investigation in the context of *Viruddhahara*.

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