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A TWO-ARM EXPLORATORY STUDY ON MENTAL HEALTH STATUS IN RELATION WITH FOOD PATTERNS

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ABSTRACT

This era witnesses the rise of a new system of mental health restoration namely; the 'Alternative mental health' which refers to all alternative ways of reinstating mental health in psychiatric patients. Amongst these approaches, the contributory role of dietary regimes in restoring the mental health is a growing subject which needs thorough understanding in an Indian ethos. Moreover, the role of dietary regimes as a preventive factor against mental ill health is also least considered till date. This study aimed to examine the relationships between mental states of individuals and their food patterns. The prime objective was to conduct an extensive literary review regarding the dietary patterns and various mental states and the second was to know the attitudes of health professionals regarding the concerned association. The study design was an exploratory trial. To satisfy the objectives, two arms were attributed, the first half of the study assured the first objective, i.e. an extensive literary review for conceptual data development and the second half by means of an experience survey conducted through a semi structured interview among health professionals. Experience survey – Among the 50 Health professionals, there was a weak agreement score of less than 0.6 as evident from Fleiss Kappa scoring regarding the concerned association. These findings contribute to a growing body of literature that diet quality/patterns are associated with mental health. Professionals from varied health arena have diverse opinion regarding the concerned association.

Key words: Dietary regimes, mental status, exploratory research

INTRODUCTION

Due to the untoward effects of the prevailing usage of psychoactive drugs, scientific fraternity is researching behind a new concept of 'Alternative mental health'¹. It refers to all the alternative methods of restoring mental health in mentally ill individuals. Amongst all the methods of alternative mental health, the least considered one especially in an Indian scenario is the role of food patterns in influencing the mental states of individuals.

Food pattern is believed to play a significant role in designing the mental framework of an individual. Food and mental health status is an emerging concept in current health arena, but it has always been the part and parcel of alternative systems of medicine, especially Ayurveda. In Ayurveda food is considered as the fuel for the maintenance of agni. It invigorates the mind². Moreover, certain ancient Indian philosophical literary wonders have strikingly declared this indissoluble relation of food with mental status. The references regarding the association of food patterns with mental states of individuals in the Indian classical literatures lie scattered, under recognized and less understood. Further; most of the clinicians, psychotherapists and dieticians seem to be aware of such an association, yet they don't follow similar strategies while prescribing a mental health promoting food pattern or they don't think it is necessary.

A study conducted by Jacka, Felice N et al pointed to the association between habitual diet and common mental disorders³. Another study published in British journal of nutrition showed the type of food⁴. Certain other studies are available regarding the association of food contents with mental disorders⁵⁻⁷. Even certain diets were tried in the management of

mental disorders^{8, 9}. These reveal that, this era witnesses a gradual change in the mind set of health seekers into alternative systems of medicine where lifestyle modifications are given utmost priority. But currently this thought is neglected in an Indian scenario and no clear collection of data is readily available. Thus, this topic was selected for a primary research. As experience is the biggest teacher, even up to an extend more than what books would promise; it is always essential to know the thoughts of professionals from varied fields of health sector regarding the concerned problem

MATERIALS AND METHODS

In this exploratory study, an extensive literature review to formulate the primary source data confined to the research problem and an experience survey to know the mindset of health professionals regarding the concerned problem were conducted. Historical perspectives of the selected classical texts dealing with Ayurvedic literature confined to the problem were laid down from Encyclopedia of Indian Medicine¹⁰. Major Ayurvedic classics were referred and the data collected regarding the related references where the entity 'satva' (mind and mental phenomena) was detailed or just mentioned. The relevant modern concepts and trends in psychology, psychiatry and dietetics were also collected mainly from relevant publications.

Similarly, the term ahaara (food, dietetics and other related facts) was collected and assembled based on the Ayurvedic classics, philosophical texts and dietetic sciences. Based on these data, healthier food habits and unhealthier food habits were sorted out. Lastly, references where food and mental status

have been mentioned together or any sort of alliance has been cited was compiled.

In the experience survey, the target population constituted five groups of health professionals comprising of Dieticians, General practitioners from Ayurveda and Modern Medicine, Psychiatrists, Clinical psychologists and Ayurvedic manasroga (Ayurveda Psychiatrists) practitioners who were selected based on feasibility after getting the ethical clearance from the Institutional ethical committee (Approval no: IEC/doc/05/13, dated 22/04/2013). 50 professionals were interviewed using a semi structured open questionnaire that isolated specific domains of query concerning the association of food patterns and mental states. Also, their opinions, attitudes and recommendations regarding various aspects were collected. The observations were detailed and Fleiss Kappa score was computed.

RESULTS

The association of mental status and food patterns was clearly stated in the Upanishats and it prevailed in the Samhita period too and the specific food patterns were believed to cause or predispose specific mental illnesses and peculiar diets were advised on a preventive basis.

According to Chaandogya upanishat, mana tripti (mental satisfaction) happens due to tripti of samaana vayu¹¹ located near the agni sthaana (paacaka agni/ site of digestion). It promotes and even sustains the agni (digestive power). Its functions include receiving the ingested food, bringing forth digestion, assimilation and absorption followed by elimination of the unwanted materials. This basically corresponds to the poorāṇa, (passing of food down to its proper receptacles-deglutition, peristaltic movements of the stomach and intestines, and absorption) and vivecana (the separation of the egest from the ingest)¹². Hence if the person is having certain mental conflicts or emotional restrains, indigestion may result¹³.

After metabolism, in the amashaya (upper gastro intestinal tract) and pacyamanaashaya, (middle gastro intestinal tract) the product obtained is Ahara rasa (digested food) which nourishes the corresponding dhaatus (basic materials for tissue formation) from rasa (first dhaatu) to shukra (semen – seventh dhaatu)¹⁴ which has many attributes concerned with manas namely, dhairya (courage), preeti (satisfaction), and harsha (happiness)¹⁵. Rasa pradoshaja vikaaraas (diseases caused by the vitiation of first dhaatu) are highly reflecting symptoms related to manas. Eg. asraddha (lack of interest in taking food) arocaka (distaste) etc.¹⁶.

According to Chaandogyopanishat, the food ingested is converted into three parts of which the āṇu roopa (minute part) of the food nourishes the mind¹⁷. The manas is said to be annamaya and the sookshma roopa (minute or subtly) of anna goes upwards and nourishes the manas. Further it is mentioned that 'aahaara sudhou satva suddhihi'¹⁸.

While explaining the actions of Rasa (taste), Madhura (sweet taste) is shad indriya prasaadana i.e. equally enjoyed by all the six indriyaas sixth being the mind. Excess use of madhura rasa causes samjna naasa (unconsciousness). Likewise, Amla rasa (sour taste) has the function of mano bodhana (stimulate sense organs) and gives dridhatva to indriyaas (strength to sense

organs). Katu rasa (pungent taste) stimulates the indriyaas. Only the likes and dislikes towards particular rasas are personal. Anyhow, rasa has definite effect on mental faculties. And in mental ill health, these likes and dislikes may vary or completely get reversed¹⁹. If, due to jihva loulya (excessive desire to some taste or food) or raaga (likes), a person over indulges in any particular rasa, it results in adverse effects or diseases.²⁰.

Food must be termed as praana (life force) as it nourishes not the body alone but also the mind in a positive manner²¹. Excessively indulging in deep thoughts along with other dietary causes result in alteration in the rasa vaha srotas (channels which carries rasa dhaatu)²². If a person experiences emotional stress, over strain etc., the state of equilibrium (milieu interieur) of the host and resulting in indigestion or metabolic error²³.

Maanasa soonyata mentioned in altered rasa dhatu reflects as deceptive function of mind (absence of ooha, vicaara, svasya nigraha and indriya nigraha)^{24, 25}. Food inadequacy causes specific mental afflictions along with physical complaints, if constantly practiced which include atriṭṭi (mental dissatisfaction) and mano buddhi indriya upaghaata (abnormal functions of manas, buddhi and indriya). Excessive and unwanted food intake causes tridosha kopa resulting in moorcha, bhrama, pralapa, aalasya etc.

In Bhavaprakasha, there are references of various dietary items in relation with specific psychological terminologies²⁶. Pooga phala (Areca catechu) is said to be mohana (produces euphoria), whereas taala majja is kincit madakara (slightly intoxicating). Madhura Daadima (Punica granatum) increases medha (intellectual capacity) and Draaksha (Vitis vinifera) cures moha and madaatyaya. Kharjoora (Phoenix sylvestris) possesses properties which alleviate mada, moorcha and diseases originating from abuse of madya (alcohol) and Nimbooka (Citrus medica-var-acida) is said to cure graha rogaas²⁷.

Generally, all the saaka varga have been contraindicated in Bhaavaprakaas'a. as the intake of saaka varga cause prajna kshaya and smrtinaasa²⁸. Yet, Kaalasaaka (*Corchorus capsularis*) and Cancuki (*Corchorus fascicularis*) are medhya. Kooshmāṇḍa (*Benincasa hispida*) is explained as ceto rogahrt (cures mental illnesses). Dugdha (milk) increases medha (intellect) and is indicated in mano rogaas and Maahisha dugdha (buffalo milk) in nidra naasa (insomnia). Navaneeta (butter) is specifically mentioned as medhya while Ghrita (ghee) increases svara (voice), smrti (memory) and medha and also is rakshoghna (which prevents from external untoward attacks). Puraṇa ghrita (ghee preserved for 1 year) is especially beneficial in unmaada (abnormal psyche) and apasmaara (convulsive disorders)²⁹.

Bhagavat Gita classified individuals into three; saatvika, rajasa and taamasa²³. Saatvika people prefers food which enhances ayu (life span), satva, bala (strength), aarogya (health), sukha (feeling of wellbeing), preeti (happiness) and snigdhatva (unctuouesness in connective tissue), sthiratva (tissue compactness) and hridya (food that gives mental satisfaction). The aahaara beloved by taamasika individuals are yaatayaamam (stale food), gata rasam (tasteless), pooti (with bad odour), paryoo shitam (spoiled) etc. We may infer the taamasa diet as the one that has least nutritive value. These are believed to create thought block and mutism, depression, reduced psychomotor activities, suicidal ideations, pessimism etc.

Table 1: Fleiss Kappa co-efficient - Ayurveda general practitioners

Domains	Fleiss Kappa score	Fleiss Kappa Co efficient
Food & Emotional wellbeing	-0.0667	0.065733
Intellectual wellbeing & food	-0.0667	
Long term effect on Mental status & Food	-0.0667	
Short term effect on Mental status & Food	-0.0667	
Inappropriate food pattern & Diagnostic tool	-0.0449	
Abnormal food habits & Mental ill health	-0.0667	
Environment & Mental status	-0.0667	
Nutrient value & Mental status	-0.0667	
Preventive Food & Mental status	-0.0667	
Curative food & Mental ill health	-0.0667	
Restrict/modify diet	-0.0667	

Table 2: Fleiss Kappa co-efficient - general practitioners of Allopathic science

Domains	Fleiss Kappa score	Fleiss Kappa Co efficient
Food & Emotional wellbeing	-0.05556	0.081055
Intellectual wellbeing & food	-0.02703	
Long term effect on Mental status & Food	-0.01672	
Short term effect on Mental status & Food	-0.0519	
Inappropriate food pattern & Diagnostic tool	-0.02703	
Abnormal food habits & Mental ill health	-0.05923	
Environment & Mental status	-0.05923	
Nutrient value & Mental status	-0.05923	
Preventive Food & Mental status	-0.00997	
Curative food & Mental ill health	-0.01333	
Restrict/modify diet	-0.00662	

Table 3: Fleiss Kappa co-efficient - Ayurveda practitioners of Maanas roga cikitsa

Domains	Fleiss Kappa score	Fleiss Kappa Co efficient
Food & Emotional wellbeing	-0.0199	0.03
Intellectual wellbeing & food	-0.0199	
Long term effect on Mental status & Food	-0.0199	
Short term effect on Mental status & Food	-0.0199	
Inappropriate food pattern & Diagnostic tool	-0.0199	
Abnormal food habits & Mental ill health	-0.0199	
Environment & Mental status	-0.0199	
Nutrient value & Mental status	-0.0199	
Preventive Food & Mental status	-0.0199	
Curative food & Mental ill health	-0.0199	
Restrict/modify diet	-0.0199	

Table 4: Fleiss Kappa co-efficient – Dieticians

Domains	Fleiss Kappa score	Fleiss Kappa Co efficient
Food & Emotional wellbeing	-0.01333	0.269
Intellectual wellbeing & food	-0.00662	
Long term effect on Mental status & Food	-0.00662	
Short term effect on Mental status & Food	-0.01672	
Inappropriate food pattern & Diagnostic tool	-0.01333	
Abnormal food habits & Mental ill health	-0.01672	
Environment & Mental status	-0.01672	
Nutrient value & Mental status	-0.01672	
Preventive Food & Mental status	-0.00662	
Curative food & Mental ill health	-0.00662	
Restrict/modify diet	-0.00662	

Table 5: Fleiss Kappa co-efficient - Psychiatrists and Clinical Psychologists

Domains	Fleiss Kappa score	Fleiss Kappa Co efficient
Food & Emotional wellbeing	-0.01333	0.268
Intellectual wellbeing & food	-0.00662	
Long term effect on Mental status & Food	-0.00662	
Short term effect on Mental status & Food	-0.00997	
Inappropriate food pattern & Diagnostic tool	-0.00997	
Abnormal food habits & Mental ill health	-0.00997	
Environment & Mental status	-0.01672	
Nutrient value & Mental status	-0.01333	
Preventive Food & Mental status	-0.00662	
Curative food & Mental ill health	-0.00662	
Restrict/modify diet	-0.0033	

Specific domains were formulated from the conceptual study for the experience survey, namely 1) food patterns and intellectual/emotional wellbeing 2) food patterns and long term/short term effects on mental status 3) food patterns and diagnosis of mental illnesses 4) food patterns and preventive/curative psychiatry 5) food patterns in mental illnesses 6) environment of food intake/ nutritive value and mental states 7) food restriction or modification by health professionals in mentally ill ones and 8) relation of mental status with environment of food intake and nutrient value.

Experience survey

To quantify the semi structured interview and to analyze the agreement – disagreement score; Fleiss Kappa scoring was done for the data collected. The scoring in each group of professionals were done based on their agreement-disagreement to the selected domains during the interview. Fleiss Kappa co-efficient for the opinion of General Ayurvedic practitioner was 0.07 (Table 1), for Allopathic general practitioners it was 0.08 (Table 2) and for Ayurvedic manasaroga practitioners was 0.03 (Table 3). Among dieticians the Fleiss Kappa co-efficient was 0.27 (Table 4) and 0.27 (Table 5) for Psychiatrist and Clinical Psychologist as well.

DISCUSSION

To define the healthier food habits is quite difficult because of the socio-cultural diversities throughout the globe. Hence considering certain aspects of dietary regimes explained in ancient and modern classics, we conclude that diet with surplus nutritious component, variety and freshness, timely food intake, table manners, sharing tendencies and avoidance of stale, refrigerated, re cooked, half cooked or over cooked food stuffs altogether constitute the healthier patterns of food intake.

Ayurvedic literatures basically support the association between intellectual wellbeing and food patterns. Eg, Bhavaprakasha, which itself is a compilation work based on mainly Sushruta Samhita and Charaka Samhita; mentions that food has definite impact over one's intellectual wellbeing. The terms prajnaaprada (retaining consciousness and being alert), medhaakara (intelligence enhancer), smrtiprada (memory enhancer), buddhiprada (enhancing common sense and logic) etc. has been used while attributing the properties for a dietary article.

Ghrita and navaneeta explained massively in Ayurvedic classics are well known to improve the intellectual wellbeing. But in Indian philosophical texts like Upanishats, Bhagavat Gita and Vaidyaakeya Subhashita Sahitya there are references which state that one's food influences one's behavior. Here the emotional wellbeing is stressed. The concept of satvika, rajasa and tamasa predominant dietary patterns explained in Bhagavat Gita are suggestive of personal food desires and dislikes and hence are considered under emotional facet of mind.

Bhavamishra, author of Bhavaprakasha could demarcate those food articles that would promote the human intellect, cure mental ailments as well as those which could also have a negative impact over mental functions. While we pace through contemporary literature, we find that healthier food habits improve one's emotional health.

Also, recommending alterations or modifications of diet in early childhood to prevent the incidences of neurotic and depressive features in adolescence are available. This statement emphasizes

the domain of dietary patterns and preventive psychiatry. The textbooks of Nutritive sciences explain that many micronutrients, vitamins and minerals are essential for proper brain development and functioning and substantiate the essentiality of modifying diet patterns to procure a radiant functioning mind.

Specific domains were selected for experience survey, concerning food, food patterns and their relationship with the mental status and 50 health professionals were interviewed. Even though Fleiss Kappa co-efficient was not significant in all cases, most of the practitioners opined that food and its pattern may have a role in the functioning of the emotional brain rather than intellectual brain. Ayurvedic professionals generally opined that certain dietary products as ghee, milk and butter taken in early childhood could refine the intellect and it is well established in the literatures. In the domain of long term and short term effects that food and food habits could possibly render on mental states, most professionals opined that they were not sure regarding these concepts but pointed to a possibility.

Food has certain short term effects on mental states as it is evidently reflected as mood alterations. Pharmacodynamics of psychotropic drugs reveal that there is a predominant action on the emotional brain (limbic system and neuron hormones). so that the desired effect is achieved. Similarly, the food when broken down into basic metabolites, nourishes the neuro-hormones and affects the functioning of the emotional brain, but on a long run.

In the domain of inappropriate feeding habits and diagnosis of mental illnesses; most professionals thoroughly agreed to the fact that a mental illness may be diagnosed with an abrupt change in feeding habits. Mostly mood disorders reflect drastic change in feeding patterns. Regarding the abnormal food patterns in mentally ill persons, all the professionals gave a positive notion that definitely abnormal mental states would precipitate in absurd feeding habits. All psychotic and neurotic symptoms had a definite involvement of changing eating patterns.

Regarding the chances of environmental influences of food intake on the mental states of individuals, a few professionals opined that although they have not observed any significant incidences regarding the query; they believe that the environment of food intake should be clean, ambient and serene. It promotes the general wellbeing of an individual and enhances positive mental states. Watching violence or working on electronic gadgets while having food, eating in a hurry etc are unhealthy patterns of food consumption. Nutrient value of food consumed and the domain of food and preventive psychiatry were rather answered together. They believed that a depletion in certain nutrients could hamper the mental states as they are essentials towards brain development and brain functioning.

CONCLUSION

Review of relevant literature concerned to the association of food patterns and mental health of individuals from Ayurvedic and allied sciences as well as Indian philosophies based on their authentic commentaries were executed with probable interpretations and analysis. Also, attitudes and recommendations of health professionals regarding the concerned association were collected and analyzed through an experience survey. Even though statistically insignificant, a trend of a definite changing mindset was observed among most

of the health professionals regarding the concerned association. There is a definite scope of further research in this area.

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