

NUTRITIONAL SUPPORT OF PSYCHOSOMATIC DISEASES: THE ROLE OF SPICES AND PERSONALIZATION BASED ON TEMPERAMENT

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- **OBJECTIVE.** To summarize current scientific evidence on the role of nutrition and spices in the nutritional support of patients with psychosomatic diseases and to substantiate a conceptual model for personalizing dietary recommendations with consideration of individual psychological characteristics, particularly temperament.
- **MATERIALS AND METHODS.** A narrative analysis of the scientific literature was performed, with priority given to systematic reviews, meta-analyses, and randomized controlled trials published predominantly between 2020 and 2026. Evidence concerning stress, overall dietary quality and psychological well-being, personalized nutrition, the microbiota-gut-brain axis, and the clinical effects of selected spices and their bioactive compounds was analyzed.
- **RESULTS.** The review addresses the relationship between psychological stress and eating behavior and the role of overall dietary quality in psychoemotional status; outlines the promise and limitations of personalized nutritional interventions; analyzes current evidence on the clinical effects of spices, particularly saffron and curcumin, considering differences in bioavailability between standardized extracts and culinary doses; and presents a conceptual approach to temperament as a modifier of how dietary recommendations are implemented within a multilevel model of nutritional support.
- **CONCLUSIONS.** Nutritional support should be considered an integral component of comprehensive care for patients with psychosomatic diseases. Spices may serve as a means of sensory personalization of a healthy dietary pattern, while the promising evidence on saffron and curcumin requires cautious clinical interpretation. Consideration of temperament may be useful for adapting behavioral strategy and improving adherence to dietary recommendations; however, the proposed model requires further clinical validation.
- **KEYWORDS:** *psychosomatic pathology, eating behavior, psychological stress, spices, saffron, curcuma, personalized nutrition, temperament.*

АЛІМЕНТАРНИЙ СУПРОВІД ПСИХОСОМАТИЧНИХ ЗАХВОРЮВАНЬ: РОЛЬ СПЕЦІЙ ТА ПЕРСОНАЛІЗАЦІЯ З УРАХУВАННЯМ ТЕМПЕРАМЕНТУ

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- **МЕТА.** Узагальнити сучасні наукові дані щодо ролі харчування та спецій в аліментарному супроводі психосоматичних захворювань і обґрунтувати концептуальну модель персоналізації харчових рекомендацій з урахуванням індивідуально-психологічних характеристик, зокрема темпераменту.
- **МАТЕРІАЛИ ТА МЕТОДИ.** Проведено наративний аналіз наукової літератури, переважно систематичних оглядів, метааналізів та рандомізованих контрольованих досліджень, опублікованих у 2020–2026 роках. Проаналізовано дані щодо взаємозв'язку стресу, якості раціону та психоемоційного благополуччя, персоналізованого харчування, ролі осі «мікробіота – кишківник – мозок», а також клінічних ефектів окремих спецій і біологічно активних компонентів.
- **РЕЗУЛЬТАТИ.** В огляді розглянуто зв'язок психоемоційного стресу з харчовою поведінкою та роль загальної якості раціону у формуванні психоемоційного стану; охарактеризовано перспективи й обмеження персоналізованих харчових втручань; проаналізовано сучасну доказову базу щодо клінічних ефектів спецій, зокрема шафрану та куркуміну, з урахуванням відмінностей у біодоступності між стандартизованими екстрактами та кулінарними дозами; викладено концептуальний підхід до врахування темпераменту як модифікатора способу впровадження харчових рекомендацій у межах багаторівневої моделі аліментарного супроводу.
- **ВИСНОВКИ.** Аліментарний супровід доцільно розглядати як складову комплексної допомоги пацієнтам із психосоматичними захворюваннями. Спеції можуть використовуватися для органолептичної персоналізації здорового раціону, а перспективні дані щодо шафрану та куркуміну потребують обережної клінічної інтерпретації. Врахування темпераменту може бути корисним для адаптації поведінкової стратегії та підвищення прихильності до харчових рекомендацій, однак запропонована модель потребує подальшої клінічної перевірки.
- **КЛЮЧОВІ СЛОВА:** *психосоматична патологія, харчова поведінка, стрес, спеції, шафран, куркума, персоналізоване харчування, темперамент.*

Psychosomatic diseases represent an important medical and social problem, since their onset, course, and prognosis are determined by a complex interaction of somatic, psychological, behavioral, and social factors. Chronic psychoemotional stress, sleep disturbances, changes in eating behavior, insufficient physical activity, and other adverse lifestyle factors may mutually reinforce pathological manifestations and negatively affect patients' quality of life.

Within the system of comprehensive care for such patients, nutrition is important not only as a source of energy and essential nutrients. It is a significant component of everyday behavior, linked to daily routine, emotional state, social interactions, dietary habits, and quality of life. At the same time, psychoemotional tension can substantially alter the nature of eating behavior. A systematic review and meta-analysis by Hill et al., which covered 54 studies involving 119,820 individuals, demonstrated an association between stress and changes in eating behavior, in particular an increased likelihood of choosing less healthy foods alongside a reduced proportion of healthy ones [1]. A broader conceptual perspective on the place of nutrition among modifiable factors of mental well-being is presented in a review by Loughman et al., which summarizes the methodological foundations of the field of nutritional psychiatry [2].

Thus, in patients with psychosomatic diseases, nutrition can be regarded not merely as a passive component of lifestyle, but as one of the potentially modifiable factors that should be taken into account within a comprehensive care program.

The modern approach to nutritional interventions is increasingly oriented toward personalization. Identical recommendations may have different effectiveness in different individuals due to differences in food preferences, established habits, motivation, behavioral responses, social environment, and the ability to adhere to proposed changes. Systematic reviews of randomized trials indicate the promise of personalized nutritional interventions, although their superiority over standard approaches remains heterogeneously supported [3–5].

In this context, spices may acquire particular significance. Their use allows for greater variety in the taste, aroma, and appearance of dishes, which potentially contributes to better acceptance of the recommended diet and longer-term adherence to it. In addition to their sensory function, certain spices and their bioactive components are the subject of clinical research regarding psychoemotional

status. The most substantial evidence base to date has been accumulated for saffron and curcumin [6–10].

At the same time, findings obtained with standardized extracts cannot be directly extrapolated to the ordinary culinary use of spices. The dose, preparation form, and bioavailability of active components in standardized extracts — particularly crocin and curcumin — may exceed by orders of magnitude the amounts actually absorbed by the body from ordinary culinary quantities of spices; for curcumin, this problem is further compounded by its low natural bioavailability, which studies overcome by combining it with piperine or using special delivery forms [11]. A review of clinical data specifically on culinary (rather than pharmacological) doses of herbs and spices confirms that effects obtained with high-dose extracts cannot be automatically extrapolated to dietary amounts [12], while pharmacokinetic studies show that different phytochemical components of spices differ substantially in absorption rate and duration of circulation in the blood, even within culinary doses [13]. Therefore, within the framework of nutritional support, spices should primarily be regarded as a biologically active component of a varied diet rather than an alternative to pharmacotherapy or psychotherapy.

A separate area of current research concerns the study of individual psychological characteristics as determinants of food choice. A systematic review by Esposito et al. demonstrated associations between specific personality traits and dietary patterns [14]. This provides grounds to suggest that personalization of nutritional support may include not only an assessment of clinical and nutritional status but also an analysis of a person's behavioral and psychological characteristics.

In this context, temperament — understood as a set of relatively stable dynamic characteristics of mental activity and behavior — is of particular interest. A large-scale meta-analysis of Cloninger's psychobiological model, which pooled data from 149 studies, confirms consistent associations between specific dimensions of temperament and character (in particular, high harm avoidance and low self-directedness) and a broad spectrum of mental disorders, which substantiates clinical interest in this construct [15]. At the same time, current evidence does not provide sufficient grounds for the direct claim that a specific temperament type corresponds to a particular diet or spice. Therefore, the use of temperament within a personalization framework should be approached with caution.

A more scientifically grounded approach is one in which temperament is regarded not as a criterion for selecting a specific product or spice, but as a potential modifier of how dietary recommendations are formulated and implemented. It may be taken into account when determining the pace of dietary habit change, the manner of communication with the patient, the structure of recommendations, the level of behavioral support required, and the sensory adaptation of the diet.

It is precisely the combination of an evidence-based approach, personalization, and the rational use of spices that determines the relevance of studying the problem of nutritional support for psychosomatic diseases.

The novelty of this study lies in the development of an integrated multilevel model of nutritional support for psychosomatic diseases, which for the first time combines evidence on nutrition, spices, and individual psychological characteristics into a unified personalization system. Unlike existing publications, which address these areas separately, the proposed model defines temperament not as a criterion for selecting a specific product or spice, but as an independent modifier of how dietary recommendations are formulated and implemented at the clinical, behavioral, and sensory levels.

Objective. The objective of this work is to substantiate a conceptual model for personalizing dietary recommendations in the nutritional support of psychosomatic diseases, considering the role of spices and individual psychological characteristics, particularly temperament, based on a synthesis of current scientific data.

TASKS

1. To analyze current scientific data on the relationship between psychological stress, dietary quality, and psychoemotional well-being.
2. To summarize the evidence base on the clinical effects of spices, particularly saffron and curcumin, in the context of psychosomatic diseases.
3. To evaluate available data on the relationship between individual psychological characteristics, particularly temperament, and eating behavior.
4. To substantiate a conceptual multilevel model for personalizing dietary recommendations with consideration of temperament as a modifier of behavioral strategy.

MATERIALS AND METHODS

The study was conducted in the format of a narrative review of the scientific literature. The analysis used publications addressing the relation-

ship between psychoemotional stress and eating behavior, personalized nutrition, the effect of dietary quality on psychoemotional well-being, the role of spices and their bioactive components, and the relationship between individual psychological characteristics and food choice.

Primary attention was given to systematic reviews, meta-analyses, and randomized controlled trials published predominantly between 2020 and 2026. Selected earlier publications were included in the analysis when they were of fundamental importance to the evidence base or represented key clinical studies. The search was conducted in the PubMed/MEDLINE databases and on the official websites of the relevant journals; for each source included in the review, the content of the in-text citation was cross-checked against the abstract and, where necessary, the full text of the original publication.

RESULTS AND DISCUSSION

Psychoemotional stress is one of the factors capable of substantially altering a person's eating behavior. The nature of such changes is not universal: in some individuals, stress is accompanied by decreased appetite and restricted food intake, whereas in others it is accompanied by increased appetite, more frequent food consumption, and a predominant choice of energy-dense foods.

A systematic review and meta-analysis by Hill et al., covering 54 studies and 119,820 participants, demonstrated an association between stress and changes in eating behavior. The most consistent finding was an increase in the consumption of less healthy foods and a decrease in the proportion of healthy foods in the diet under the influence of stress [1]. This is of particular importance for patients with psychosomatic diseases, since the prolonged persistence of an unfavorable eating pattern may create an additional behavioral burden on the body.

It is important to consider that stress-related eating behavior is shaped by more than a single factor. Individual reactivity, prior experience, established dietary habits, food availability, social environment, and psychological coping mechanisms all play a role. Consequently, the same stressful situation may be accompanied by fundamentally different patterns of eating behavior.

For psychosomatic diseases, this interaction is bidirectional in nature. Psychoemotional tension can alter eating patterns, while, in turn, an unfavorable dietary structure, irregular eating, and emotional overeating can complicate symptom

control and reduce quality of life. For this reason, nutritional support should be regarded not as an isolated dietary recommendation but as a component of a comprehensive approach to lifestyle modification.

In light of the above, the assessment of nutrition's effect on psychoemotional status should be conducted primarily from the standpoint of overall dietary quality rather than a single «therapeutic» product. A review by Firth et al. emphasizes the relationship between dietary patterns and mental well-being [16]. The practical relevance of this relationship was first demonstrated by the pilot randomized controlled «SMILES» trial by Jacka et al., in which structured dietary counseling bringing the diet closer to a Mediterranean model was associated with a clinically significant improvement in symptoms of major depressive disorder compared with social support [17]. A subsequent meta-analysis of randomized trials of dietary interventions, conducted by Firth et al., confirmed a statistically significant, though moderate, effect of dietary improvement on symptoms of depression and anxiety [18]. Consistent findings were obtained in a large-scale synthesis of observational studies by Lassale et al., which demonstrated an inverse relationship between adherence to high-quality dietary patterns (including the Mediterranean pattern) and the risk of depressive manifestations [19]. A similar trend has been observed in studies of the Mediterranean dietary model. A systematic review and meta-analysis of randomized controlled trials by Bizzozero-Peroni et al. demonstrated a potential positive effect of the Mediterranean diet on depressive symptomatology [20].

The opposite pole of dietary quality — excessive consumption of ultra-processed foods — is likewise associated with unfavorable psychoemotional outcomes. A systematic review and meta-analysis of observational studies by Lane et al., involving more than 258,000 individuals, showed that a higher proportion of ultra-processed foods in the diet is associated with increased odds of depressive and anxiety symptomatology, and, in prospective studies, with an increased subsequent risk of developing depression [21]. These data indirectly support the emphasis proposed in this article on the overall dietary structure rather than on individual «target» foods or spices.

One of the possible biological underpinnings of the relationship between nutrition and psychoemotional status is the microbiota-gut-brain axis. A classic review by Cryan et al. describes the neuroendocrine, immune, and neural pathways

through which the gut microbiota can influence brain structure and function [22], while a more recent review by Horn et al. summarizes clinical and preclinical data on the effect of dietary patterns on this axis in depression, cognitive decline, and other conditions [23]. Marx et al. systematized the key mechanisms that may mediate the relationship between nutrition and depression, including inflammatory processes, oxidative stress, neuroplasticity, and microbiota function [24]. These data do not provide grounds for a simplistic interpretation that «food cures depression», but they reinforce the biological plausibility of the observed associations and support the rationale for regarding nutrition as a modifiable factor in patient care.

These findings have important practical implications. In the nutritional support of patients with psychosomatic diseases, it is advisable to focus on the overall dietary structure: an adequate amount of vegetables, fruits, berries, whole grains, legumes, nuts, seeds, fish, and other sources of complete nutrients, combined with limiting excessive consumption of foods high in added sugar, saturated fat, excess salt, and a high degree of industrial processing. Thus, in the proposed model, spices do not replace the basic principles of healthy eating but complement them.

A person's adherence to the recommended dietary pattern is also of particular importance. Even a scientifically grounded dietary recommendation will be of limited effectiveness if the patient is unable or unwilling to follow it over an extended period. It is precisely this problem that substantiates the need for personalization.

Personalization of nutrition involves adapting recommendations to an individual's specific characteristics. Unlike a universal approach, it takes into account not only the need for a certain amount of energy and nutrients but also actual living conditions, dietary habits, preferences, and the feasibility of adherence to recommendations. A meta-analysis by Cross et al. demonstrated the promise of personalized nutritional interventions in adults with elevated cardiometabolic risk [4]. Additional data on the use of digital technologies for personalized nutritional interventions indicate the potential for improving specific indicators of eating behavior [5].

In psychosomatic diseases, personalization acquires additional significance due to possible instability of appetite, emotional overeating, the use of food as a means of compensating for negative emotions, or, conversely, a loss of interest in food. A systematic review and meta-analysis of behavior

ral interventions for emotional eating by Power et al. showed that the effectiveness of such programs substantially depends on the specific set of behavior-change techniques used (in particular, action planning and self-monitoring), rather than on psychological counseling as such [25]. This underscores that, in psychosomatic diseases, spices can be only one of the simple tools for dietary adaptation, embedded within a broader behavioral strategy.

Spices are traditionally used to enhance the flavor and aromatic properties of food. At the same time, current research also regards them as a source of bioactive compounds. The practical significance of spices in personalized nutrition lies primarily in their ability to increase the sensory appeal of dishes. This is particularly important in cases where a patient finds it difficult to adhere to a recommended diet because of its monotony.

Flavor diversity can contribute to a more positive perception of healthy foods. For example, vegetable, legume, or whole-grain dishes can acquire different sensory characteristics depending on the combination of spices used. Thus, the same basic dietary structure can be adapted to individual taste preferences without a fundamental change in its nutritional value.

The study by Petersen et al. is an important example of the clinical evaluation of spices specifically within a dietary context. In a randomized, crossover, controlled-feeding trial, the use of a blend of herbs and spices at a relatively high culinary dose was associated with improved 24-hour ambulatory blood pressure indices in individuals at risk of cardiometabolic diseases [6]. This finding does not imply that spices can be used as a standalone therapeutic agent. However, it confirms the promise of their inclusion in a healthy dietary structure and demonstrates that clinically meaningful effects can be studied specifically in a dietary context, rather than only with high-dose extracts.

For patients with psychosomatic diseases, the psychological aspect may also be important. A pleasant aroma and taste of food can influence the subjective perception of a meal, its emotional component, and satisfaction with eating. However, these propositions require further dedicated clinical study.

Among spices, saffron (*Crocus sativus* L.) attracts particular attention; its bioactive components are represented primarily by crocins, crocetin, picrocrocetin, and safranal. Clinical studies of saffron have been summarized in recent years in several

systematic reviews and meta-analyses. In 2026, Mahmoudi et al. published a GRADE-assessed systematic review and meta-analysis of 34 randomized controlled trials (1,769 participants) examining the effect of saffron on depression, anxiety, and mood disorders [7]. The results obtained indicate a potential positive effect of saffron on certain indicators of depressive and anxiety symptomatology based on self-report data. At the same time, the authors emphasize substantial heterogeneity of the evidence base (I^2 exceeded 90% for the main indicators) and the absence of a significant effect on clinician-rated scales, which limits the possibility of formulating categorical clinical conclusions.

Additional interest is attracted by a meta-analysis by Shafiee et al., in which the efficacy of saffron was compared with that of selective serotonin reuptake inhibitors in depression and anxiety: no significant difference between the groups was found, while the adverse-effect profile of saffron was more favorable [8]. The existence of such comparative studies increases scientific interest in saffron; however, it is not grounds for regarding it as a replacement for standard pharmacotherapy.

A similar distinction between culinary and pharmacological use applies to turmeric (*Curcuma longa* L.) — a widely used culinary spice with a warm, pungent aroma, the main clinical research interest in which relates to curcumin, its polyphenolic component. A systematic review and meta-analysis by Wang et al. showed a potential efficacy of curcumin for depressive symptomatology, while the authors explicitly note the low quality of evidence and considerable uncertainty of this conclusion [9].

Of particular relevance are data from a new GRADE-assessed systematic review and meta-analysis by Musazadeh et al., published in July 2026 in the journal *Annals of General Psychiatry* (PMID 42472817) [10]. The analysis included 19 randomized controlled trials: pooled data from 8 studies showed a significant reduction in the severity of depression (SMD -0.76 ; 95% CI -1.22 to -0.30 ; $I^2 = 94.5\%$), and pooled data from 11 studies showed a significant reduction in depressive symptomatology (SMD -0.53 ; 95% CI -0.97 to -0.09 ; $I^2 = 85.7\%$). At the same time, the authors themselves explicitly state that, according to sensitivity analysis, the observed effect proved unstable, and that the considerable heterogeneity of the studies ($I^2 > 85\%$) requires cautious interpretation of the findings and confirmation in further high-quality studies.

Thus, current data allow curcumin to be regarded as a promising subject for further research

but do not provide grounds for recommending turmeric or curcumin as a standalone treatment for psychosomatic diseases. Within everyday nutrition, turmeric can be used to diversify vegetable, grain, and legume dishes — its practical value in this case is related primarily to its culinary properties and its inclusion in an overall healthy dietary pattern.

Alongside saffron and turmeric, the diet may also include ginger, cinnamon, cardamom, coriander, cumin, fennel, black pepper, and other spices. Their selection should be based not on the simplified principle of «a specific spice for a specific temperament type», but on individual tolerance, taste preferences, culinary traditions, and clinical status. For example, ginger, distinguished by a pronounced pungent and hot taste, can be used in dishes and beverages given good individual tolerance; cinnamon, with its sweetish-spicy aroma, is suitable for flavoring porridges, fruit dishes, and beverages; cardamom, with its intense aroma, is suitable for beverages and certain desserts with low added-sugar content; and coriander and cumin, with their pronounced spicy aroma, are suitable for vegetable and legume dishes.

In addition to the sensory characteristics of spices, food choice is also influenced by a person's personality characteristics, since eating behavior is a complex phenomenon determined by more than physiological hunger alone: food choice is influenced by emotional state, habits, social factors, food availability, motivation, and personality characteristics. A systematic review by Esposito et al. confirmed the existence of relationships between specific personality traits and food choice [14].

These findings are of fundamental importance for the proposed model. They suggest that personalization of nutrition may be more effective when it takes into account not only biomedical characteristics but also behavioral context. For this reason, temperament should be regarded as a potential additional tool for personalization, rather than as a basis for the rigid classification of patients.

Temperament characterizes the dynamic features of behavior, including the speed and intensity of reactions, emotional reactivity, activity level, and features of adaptation to change; these characteristics are consistently associated with a broad spectrum of mental disorders, in particular through high harm avoidance and low self-directedness [15]. In the context of nutritional support, these characteristics may potentially influence how a person perceives and implements dietary recommendations.

For instance, in cases of high emotional reactivity, manifested as a rapid emotional response, clear, brief, and specific recommendations are advisable. In cases of pronounced impulsivity, accompanied by spontaneous food choices, greater emphasis on advance meal planning, the preparation of an accessible set of healthy foods, and the reduction of situations in which food choices are made spontaneously is advisable. In cases of a high need for variety, manifested as a rapid decline in interest in monotonous food, a broader use of different cooking methods and combinations of foods and spices can be applied, which helps sustain interest in healthy eating. In cases of a tendency toward behavioral stability and slow acceptance of change, the gradual introduction of new foods and dishes without an abrupt restructuring of the habitual diet is advisable. In cases of increased emotional sensitivity with a strong reaction to setbacks, not only the content of recommendations but also the manner in which they are delivered is important: excessively restrictive or categorical dietary requirements may reduce adherence to the program, so supportive communication and the avoidance of excessive restrictions are advisable; specific behavior-change techniques for such support (action planning, self-monitoring, gradual goal-setting) are described in detail in the review by Power et al. [25]. The correspondences presented here are conceptual in nature and do not constitute a clinical algorithm for prescribing a diet.

Accordingly, this model consistently combines the clinical, nutritional, behavioral, psychological, and sensory levels of support, as well as a level of outcome monitoring, within whose structure temperament is positioned not at the level of determining nutritional needs, but at the level of adapting behavioral strategy and the manner of implementing recommendations.

The first stage should be an assessment of actual dietary intake. It is advisable to determine the meal schedule, the nature of snacking, the frequency of vegetable and fruit consumption, protein sources, the amount of foods high in added sugar and saturated fat, and the pattern of food intake in response to stress or negative emotions. The next step is to establish a basic dietary model, the foundation of which should consist of a variety of plant-based foods, sources of complete protein, and foods high in dietary fiber and beneficial unsaturated fats. In the absence of medical contraindications, it is advisable to bring the diet closer to the principles of the Mediterranean dietary model, for which a substantial body of evidence has accumulated

regarding positive effects on overall health and potential improvement of psychoemotional status [16, 20]. Particular attention should be paid to meal regularity, since prolonged intervals between meals, chaotic eating patterns, and the replacement of complete meals with sweet or high-calorie snacks may sustain an unfavorable pattern of eating behavior; a large-scale population study by Tae and Chae, involving a sample of more than 21,000 adults, demonstrated that greater irregularity of main meals is associated with increased odds of depressive symptomatology, with this association being attenuated by high dietary diversity and intensified by breakfast skipping [26].

Within the structure of basic principles, spices should be used as a means of diversifying a healthy diet, since their use can enhance the palatability of dishes and help avoid dietary monotony. In doing so, several principles should be observed: spices should be used in culinary amounts appropriate to individual tolerance, and they should not be regarded as a substitute for pharmacological treatment. Saffron and turmeric are the most promising spices given the availability of current clinical research [7–10]; however, they should be regarded specifically as dietary components, whereas standardized preparations require separate evaluation by a physician.

In the proposed model, temperament is not used to determine a medical diet — its significance lies in the choice of the manner of communication and the implementation of dietary changes. For example, a patient prone to impulsive decisions may benefit from advance menu planning and the preparation of a ready set of healthy snacks. A person who adapts to change with difficulty is better offered a gradual introduction of new foods rather than an abrupt restructuring of the entire diet. For a patient who quickly grows tired of monotony, greater variability of dishes, while maintaining the same basic dietary principles, may be beneficial. In cases of increased emotional sensitivity, supportive communication and the avoidance of excessively categorical dietary prohibitions become particularly important. Thus, personalization based on temperament concerns primarily the manner in which recommendations are implemented, rather than the formulation of a separate «diet for a specific temperament».

The practical implementation of the proposed approach should proceed sequentially. At the clinical assessment stage, the specialist determines the primary condition, comorbid pathology, and existing constraints, thereby ensuring the safety

of subsequent recommendations. At the dietary history stage, the patient's actual diet and eating schedule are assessed, allowing the main problems to be identified. Behavioral assessment is aimed at identifying emotional overeating, impulsivity, and skipped meals, and allows behavioral barriers to be established. The next stage of personalization involves taking into account the patient's taste preferences, habits, and individual characteristics in order to increase the feasibility of the recommendations. At the dietary-formulation stage, the basic healthy dietary structure is determined, ensuring nutritional adequacy. Sensory adaptation consists of using spices and various cooking methods to increase the appeal of the diet. Behavioral adaptation involves selecting the pace and manner of implementing changes in order to improve patient adherence, while the final monitoring stage allows timely assessment of tolerance and adherence to recommendations, with the support program adjusted as needed.

CONCLUSIONS

1. Nutrition is an important component of comprehensive care for patients with psychosomatic diseases: psychoemotional stress can substantially alter eating behavior, and dietary quality — including the degree of industrial food processing and meal regularity — is consistently associated with overall psychoemotional status.

2. One of the probable biological mechanisms underlying this relationship is the microbiota-gut-brain axis, together with related inflammatory and neuroplastic processes, which supports the biological plausibility of the observed associations.

3. Spices should be regarded as a functional component of a healthy diet and a tool for its sensory personalization, rather than as a substitute for pharmacotherapy or psychotherapy; findings obtained with standardized extracts of saffron and curcumin cannot be directly extrapolated to culinary doses of spices, given the substantial differences in the bioavailability of active components.

4. Temperament cannot be used as an independent criterion for prescribing a specific spice or diet. Its potential practical significance lies in the possibility of adapting the manner of communication, the pace of dietary habit change, and the behavioral strategy for implementing recommendations, in particular by relying on evidence-based behavior-change techniques.

5. The proposed multilevel model of nutritional support combines clinical assessment, nutritional adequacy, behavioral and psychological adapta-

tion, sensory personalization, and monitoring. Its effectiveness requires further verification in prospective clinical studies.

A promising direction for further research is the conduct of prospective studies evaluating the effectiveness of personalized nutritional support depending on patients' individual psychological characteristics. Of particular interest is the development of a standardized algorithm for assessing eating behavior, adherence to recommendations, and the approach to adapting dietary changes. It is also advisable to study the role of spices as a means of enhancing the sensory appeal of a healthy diet.

REFERENCES

- Hill D, Conner M, Clancy F, Moss R, Wilding S, Bristow M, *et al.* Stress and eating behaviours in healthy adults: a systematic review and meta-analysis. *Health Psychol Rev.* 2022;16(2):280–304. doi: <https://doi.org/10.1080/17437199.2021.1923406>
- Loughman A, Staudacher HM, Rocks T, Ruusunen A, Marx W, O'Neil A, *et al.* Diet and mental health. In: Cowan CSM, Leonard BE, editors. *Microbes and the mind: the impact of the microbiome on mental health*. Basel: Karger; 2021. p. 100–12. (Modern Trends in Psychiatry; vol. 32). doi: <https://doi.org/10.1159/000510422>
- Shyam S, Lee KX, Tan ASW, Khoo TA, Harikrishnan S, Lalani SA, *et al.* Effect of personalized nutrition on dietary, physical activity, and health outcomes: a systematic review of randomized trials. *Nutrients.* 2022;14(19):4104. doi: <https://doi.org/10.3390/nu14194104>
- Cross V, Stanford J, Gomez-Martin M, Collins CE, Robertson S, Clarke ED. Do personalized nutrition interventions improve dietary intake and risk factors in adults with elevated cardiovascular disease risk factors? A systematic review and meta-analysis of randomized controlled trials. *Nutr Rev.* 2025;83(7):e1709–21. doi: <https://doi.org/10.1093/nutrit/nuae149>
- Lau Y, Wong SH, Chee DGH, Ng BSP, Ang WW, Han CY, *et al.* Technology-delivered personalized nutrition intervention on dietary outcomes among adults with overweight and obesity: a systematic review, meta-analysis, and meta-regression. *Obes Rev.* 2024;25(5):e13699. doi: <https://doi.org/10.1111/obr.13699>
- Petersen KS, Davis KM, Rogers CJ, Proctor DN, West SG, Kris-Etherton PM. Herbs and spices at a relatively high culinary dosage improves 24-hour ambulatory blood pressure in adults at risk of cardiometabolic diseases: a randomized, crossover, controlled-feeding study. *Am J Clin Nutr.* 2021;114(6):1936–48. doi: <https://doi.org/10.1093/ajcn/nqab291>
- Mahmoudi R, Mohammadi-Sartang M, Servatyari K, Rafieipour N. Effect of saffron on depression, anxiety and mood disorder: a GRADE assessed systematic review and meta-analysis of 34 randomized controlled trials. *Nutr Neurosci.* 2026;29(7):816–37. doi: <https://doi.org/10.1080/1028415X.2025.2602153>
- Shafiee A, Jafarabady K, Seighali N, Mohammadi I, Rajai Firouz Abadi S, Soltani Abhari F, *et al.* Effect of saffron versus selective serotonin reuptake inhibitors (SSRIs) in treatment of depression and anxiety: a meta-analysis of randomized controlled trials. *Nutr Rev.* 2025;83(3):e751–61. doi: <https://doi.org/10.1093/nutrit/nuae076>
- Wang Z, Zhang Q, Huang H, Liu Z. The efficacy and acceptability of curcumin for the treatment of depression or depressive symptoms: a systematic review and meta-analysis. *J Affect Disord.* 2021;282:242–51. doi: <https://doi.org/10.1016/j.jad.2020.12.158>
- Musazadeh V, Faghfour AH, Falahatzadeh M, Mahmoudinezhad M, Alizadeh M, Shidfar F. Efficacy of curcumin in depression: a grade-assessed systematic review and meta-analysis of randomized controlled trials. *Ann Gen Psychiatry.* 2026 Jul 19. doi: <https://doi.org/10.1186/s12991-026-00676-z>
- Heidari H, Bagherniya M, Majeed M, Sathyapalan T, Jamialahmadi T, Sahebkar A. Curcumin-piperine co-supplementation and human health: a comprehensive review of preclinical and clinical studies. *Phytother Res.* 2023;37(4):1462–87. doi: <https://doi.org/10.1002/ptr.7737>
- Mackonochie M, Rodriguez-Mateos A, Mills S, Rolfe V. A scoping review of the clinical evidence for the health benefits of culinary doses of herbs and spices for the prevention and treatment of metabolic syndrome. *Nutrients.* 2023;15(23):4867. doi: <https://doi.org/10.3390/nu15234867>
- Huang Y, Petersen KS, Kris-Etherton PM, Edirisinghe I, Sandhu AK, Burton-Freeman BM. Phytochemicals from herbs and spices: their absorption, metabolism, and relationship to clinical outcomes. *Nutr Rev.* 2026;84(Suppl 1):29–36. doi: <https://doi.org/10.1093/nutrit/nuag022>
- Esposito CM, Ceresa A, Buoli M. The association between personality traits and dietary choices: a systematic review. *Adv Nutr.* 2021;12(4):1149–59. doi: <https://doi.org/10.1093/advances/nmaa166>
- Komasi S, Rezaei F, Hemmati A, Rahmani K, Amianto F, Miettunen J. Comprehensive meta-analysis of associations between temperament and character traits in Cloninger's psychobiological theory and mental disorders. *J Int Med Res.* 2022;50(1):3000605211070766. doi: <https://doi.org/10.1177/03000605211070766>
- Firth J, Gangwisch JE, Borsini A, Wootton RE, Mayer EA. Food and mood: how do diet and nutrition affect mental wellbeing? *BMJ.* 2020;369:m2382. doi: <https://doi.org/10.1136/bmj.m2382>
- Jacka FN, O'Neil A, Opie R, Itsiopoulos C, Cotton S, Mohebbi M, *et al.* A randomised controlled trial of dietary improvement for adults with major depression (the 'SMILES' trial). *BMC Med.* 2017;15(1):23. doi: <https://doi.org/10.1186/s12916-017-0791-y>
- Firth J, Marx W, Dash S, Carney R, Teasdale SB, Solmi M, *et al.* The effects of dietary improvement on symptoms of depression and anxiety: a meta-analysis of randomized controlled trials. *Psychosom Med.* 2019;81(3):265–80. doi: <https://doi.org/10.1097/PSY.0000000000000673>
- Lassale C, Batty GD, Baghdadli A, Jacka F, Sánchez-Villegas A, Kivimäki M, *et al.* Healthy dietary in-

- rices and risk of depressive outcomes: a systematic review and meta-analysis of observational studies. *Mol Psychiatry*. 2019;**24**(7):965–86.
doi: <https://doi.org/10.1038/s41380-018-0237-8>
20. Bizzozero-Peroni B, Martínez-Vizcaíno V, Fernández-Rodríguez R, Jiménez-López E, Núñez de Arenas-Arroyo S, Saz-Lara A, *et al*. The impact of the Mediterranean diet on alleviating depressive symptoms in adults: a systematic review and meta-analysis of randomized controlled trials. *Nutr Rev*. 2025;**83**(1):29–39.
doi: <https://doi.org/10.1093/nutrit/nuad176>
 21. Lane MM, Gamage E, Travica N, Dissanayaka T, Ash-tree DN, Gauci S, *et al*. Ultra-processed food consumption and mental health: a systematic review and meta-analysis of observational studies. *Nutrients*. 2022;**14**(13):2568.
doi: <https://doi.org/10.3390/nu14132568>
 22. Cryan JF, O’Riordan KJ, Cowan CSM, Sandhu KV, Bastiaanssen TFS, Boehme M, *et al*. The microbiota-gut-brain axis. *Physiol Rev*. 2019;**99**(4):1877–2013.
doi: <https://doi.org/10.1152/physrev.00018.2018>
 23. Horn J, Mayer DE, Chen S, Mayer EA. Role of diet and its effects on the gut microbiome in the pathophysiology of mental disorders. *Transl Psychiatry*. 2022;**12**(1):164.
doi: <https://doi.org/10.1038/s41398-022-01922-0>
 24. Marx W, Lane M, Hockey M, Aslam H, Berk M, Walder K, *et al*. Diet and depression: exploring the biological mechanisms of action. *Mol Psychiatry*. 2021;**26**(1):134–50.
doi: <https://doi.org/10.1038/s41380-020-00925-x>
 25. Power D, Jones A, Keyworth C, Dhir P, Griffiths A, Shepherd K, *et al*. Emotional eating interventions for adults living with overweight and obesity: a systematic review and meta-analysis of behaviour change techniques. *J Hum Nutr Diet*. 2025;**38**(1):e13410.
doi: <https://doi.org/10.1111/jhn.13410>
 26. Tae H, Chae JH. Irregular meal frequency and depressive symptoms: moderating roles of dietary diversity and breakfast skipping. *J Affect Disord*. 2026;**404**:121417.
doi: <https://doi.org/10.1016/j.jad.2026.121417>

ФІНАНСУВАННЯ

Це дослідження не отримувало цільового фінансування від державних, комерційних або некомерційних організацій.

КОНФЛІКТ ІНТЕРЕСІВ

Автор заявляє про відсутність конфлікту інтересів.

ВИКОРИСТАННЯ ГЕНЕРАТИВНОГО ШТУЧНОГО ІНТЕЛЕКТУ

Генеративний штучний інтелект не використовувався для створення наукового тексту, результатів дослідження, висновків або аналізу даних.

ВІДОМОСТІ ПРО АВТОРА ТА ЙОГО ВНЕСОК

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