



ABSTRACT

The possibility of incorporating AI into culinary medicine is examined in this literature review in order to overcome obstacles that prevent people from cooking at home. By utilizing prompts based on dietary requirements and tastes, Alpowered meal planning and recipe suggestions can provide individualized guidance for choosing healthy foods. Integrating AI into culinary medicine has the potential to change nutrition and disease prevention, making them more inclusive and accessible by making healthy eating simple and boosting confidence. However, issues with bias, misinformation, privacy, and data security need to be addressed.

INTRODUCTION

• With the growing popularity of the emerging field of culinary medicine, there is a growing understanding of the culinary barriers needed to be overcome to adopt healthier eating habits. Lack of confidence, low skills, and lack of time are some of the most common barriers that prevent individuals from cooking at home. However, integrating AI can offer personalized support for home cooking and help individuals overcome these barriers. Al-powered meal planning and recipe suggestions can guide healthy and nutritious food choices that cater to their dietary needs and preferences. Additionally, AI can modify recipes to accommodate individual health conditions and nutrient deficiencies, making cooking easier and more accessible. Individuals can improve their cooking skills, learn new recipes, and better manage chronic conditions with personalized

nutrition recommendations. Therefore, the integration of AI has the potential to empower individuals to overcome culinary barriers and adopt a healthier lifestyle.

Integrating AI into Culinary Medicine: A Revolution in Nutrition and Home Cooking

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MATERIAL AND METHODS

We systematically searched peer-reviewed articles using electronic databases, including Google Scholar and Scopus. Keywords used in the search included "culinary medicine", "nutrition", "AI", "machine learning", "recipe generation", "personalized nutrition", "chronic disease," and "healthcare."

 In addition to the systematic literature review, we also utilized ChatGPT, a large language model trained by OpenAI, to generate potential research ideas and identify further relevant literature. We inputted our research question and used the model's capabilities to create new hypotheses and suggest additional search terms and databases to explore. We then analyzed the findings to identify the potential benefits of integrating AI into culinary medicine and provide insights into how patients and physicians can use AI to improve the field.

Preview of ChatGPT program ChatGPT \triangle **Capabilities** Examples Limitations Explain quantum computi nembers what user sai simple terms" → earlier in the conversation incorrect information Allows user to provide follow-up Sot any creative ideas for a 10 year old's birthday?" → 'How do I make an HTTP reques frained to decline inappropria in Javascript?" -> Send a message.

Example of ChatGPT prompting for DASH diet recommendation.

| xx | Generate a macaroni and cheese recipe that would follow the DASH diet | | | |
|----|--|---|---|----|
| \$ | Sure! Here's a macaroni and cheese recipe that follows the DASH (Dietary Approaches to Stop Hypertension) diet, which is a heart-healthy eating plan that emphasizes whole grains, | 0 | ۵ | \$ |
| | fats, and added sugars. | | | |
| | Ingredients: | | | |
| | 8 oz whole grain elbow macaroni | | | |
| | 2 cups diced butternut squash | | | |
| | 1/2 cup low-fat milk | | | |
| | 1/2 cup low-sodium chicken or vegetable broth | | | |
| | 1 cup shredded reduced-fat cheddar cheese | | | |
| | 1/4 cup grated Parmesan cheese | | | |
| | 1/2 tsp garlic powder | | | |
| | 1/2 tsp onion powder | | | |
| | 1/4 tsp black pepper | | | |
| | 1/4 tsp paprika | | | |
| | Cooking spray | | | |
| | | | | |

The reviewed articles suggest that AI has the potential to address culinary barriers such as lack of confidence, low skills, and lack of time. By incorporating machine learning algorithms, Al can generate personalized dietary recommendations that cater to individual health conditions, dietary preferences, and nutrient deficiencies. These recommendations can help individuals make more informed food choices without requiring extensive culinary knowledge or skills. Additionally, Al-powered recipe recommendation systems can provide easy-tofollow recipes and meal plans, reducing the time and effort needed for meal planning and preparation. By simplifying the process of healthy eating, integrating AI into culinary medicine can increase confidence and motivation for individuals to adopt healthier lifestyles. The concept of culinary medicine, which combines the art of cooking with the science of medicine, is a promising approach to preventing and treating chronic diseases.

RESULTS

Example of ChatGPT providing suggestions for YouTube channels about cooking

| x | Provide two resources on youtube that will help me get started in the kitchen | | | |
|----------|---|---|---|----|
| P | Certainly! Here are two YouTube channels that can provide you with valuable resources to get started in the kitchen: | ٥ | ۵ | \$ |
| | "Tasty" - Tasty is a popular YouTube channel that offers a wide range of cooking videos, from basic cooking techniques to more complex recipes. They provide step-by-step instructions with visuals, making it easy to follow along. Tasty's videos often include tips, tricks, and hacks to simplify cooking and enhance flavors. They also cover various cuisines, dietary preferences, and skill levels, making it accessible for beginners and experienced cooks alike. "Maangchi" - If you're interested in learning about Korean cuisine, "Maangchi" is an excellent YouTube channel to check out. Maangchi, a Korean home cook, shares authentic Korean recipes with detailed instructions and demonstrations in English. Her videos are engaging and informative, covering a wide range of traditional Korean dishes, from easy-to-make recipes to more complex ones. She also provides tips on where to find Korean ingredients and how to substitute them if they're not available in your area. | | | |
| | Remember to always exercise caution and follow food safety guidelines when cooking, regardless of the resources you use. It's important to practice safe food handling practices, such as washing hands, keeping a clean cooking environment, and cooking food to appropriate temperatures. Happy cooking! | | | |

• Overall, using AI in culinary medicine can revolutionize how we approach nutrition and disease prevention, providing more personalized and accessible dietary recommendations to improve public health. Furthermore, Al-powered nutrition interventions can be tailored to individuals with varying cultural backgrounds, dietary restrictions, and socioeconomic status, making healthy eating more accessible and inclusive. However, addressing concerns related to privacy, data security, and the potential for AIgenerated recommendations to perpetuate bias and misinformation is essential.

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CONCLUSION

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