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Abbreviations: Al: Artificial Intelligence; ChatGPT: Chat Generative Pre-training Transformer; LLM: Large Language Model

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Synthesizing Mind-Sets for Participants Undergoing Clinical Trials — The Case of Weight Loss Drugs

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Abstract

The paper focuses on the synthesis of mind-sets for patients who are undergoing clinical trials with weight-reducing drugs. The objective is to demonstrate how LLMs, large language models, can be combined with Mind Genomics thinking to better understand how patients in these clinical trials may think. Although the data are simulated, the outcome provides a way for the clinician and the drug manufacturer, as well as the participating physician, to understand the deeper thoughts of the study participants. As such, the approach is presented as a didactic tool to introduce the minds of patients as people to clinicians and to drug companies, doing so in the same spirit as consumer researchers seek to understand the corporation's customers.

Introduction

Recently, there has been a significant increase in clinical testing for weight loss drugs that are advertised directly to consumers but requiring a doctor's prescription. One important aspect that is sometimes overlooked is the need to more deeply understand the patient's cognitive and emotional state throughout the investigation, from the time the patient signs up for the trial until the completion of the trial, and even later followups. This need is a general one, not limited to the weight loss drugs, although the latter will be the subject of this paper [1-3].

In the world of drug trials with patient volunteers, there are many questions needing consideration, and often deeper answers of a particular nature suited for the drug. A simple list of 15 such questions appears below, based upon a request to ChatGPT 3.5 to provide relevant questions. The range of topics suggests an opportunity to contribute to the knowledge of the mind of the patient volunteer. Questions 8 and 9, shown in all capitals, italicized, and bold type, are the ones which are the basis of this paper. They are shown in the context of the many other questions developed by ChatGPT 3.5, a Large Language Model (LLM) in the world of AI (artificial intelligence).

- 1. How can a thorough understanding of a patient's mind-set impact the results of a clinical trial?
- 2. How do researchers now assess and take

into account patient perceptions and views throughout the testing phase?

- 3. What are common misconceptions or biases that researchers may encounter while seeking to understand patient perspectives in clinical trials?
- 4. How can cultural and social factors impact a patient's experience in a clinical trial?
- 5. What strategies may researchers use to ensure that individuals from diverse backgrounds feel recognized and understood throughout the testing process?
- 6. How does the patient's psychological and emotional condition impact their physical response to an experimental treatment in a clinical trial?
- 7. What are the potential risks or challenges that might arise if researchers fail to consider the psychological aspects of a patient's experience throughout a trial?
- 8. HOW MIGHT TECHNOLOGY AND DIGITAL TOOLS ENHANCE UNDERSTANDING AND CONTROL OF THE COGNITIVE AND EMOTIONAL FACTORS AFFECTING A PATIENT'S PARTICIPATION IN A CLINICAL TRIAL?
- 9. WHAT ETHICAL CONCERNS MUST RESEARCHERS CONSIDER WHILE TRYING TO ACCESS AND ASSESS A PATIENT'S THOUGHTS AND FEELINGS DURING A STUDY?
- 10. How may findings from studies on patient attitudes and behaviors improve the

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planning and implementation of future clinical trials?

- 11. How can healthcare professionals and researchers enhance their training to include patient-centered methodologies and perspectives into clinical trials?
- 12. How do patient advocacy groups and support networks influence the recognition and importance of the patient's viewpoint in the research process?
- 13. How might collaboration between patients, researchers, and healthcare professionals improve the efficacy and importance of clinical trials?
- 14. What are examples of successful partnerships between patients and researchers that have improved outcomes in clinical trials?
- 15. How might patients be empowered to actively participate in decision-making and provide input for the development and execution of clinical trials?

Clinical testing presents opportunities and challenges in understanding patients' cognitive and emotional experiences in a research. Recognizing the importance of patient perspectives and incorporating them into the research process may enhance the quality and relevance of clinical investigations. Researchers should prioritize the psychological well-being of patients and consider their perspectives and attitudes towards the treatments under study. Adopting a patient-centered approach to clinical testing may lead to more efficient and personalized healthcare solutions, which can be advantageous for individuals and society as a whole [4-7].

The Value of Knowing Mind-Sets of Subjects in Clinical Tests

Understanding the mind-sets of participants in clinical trials for weight reduction medications is crucial for researchers to optimize the effectiveness of the trial. Knowledge of mindsets helps anticipate and resolve obstacles to adherence and compliance, as well as identify potential biases or confounding variables. By understanding participants' motivations, anxieties, and expectations, researchers can provide more specific support, leading to improved retention rates and a deeper understanding of the drug's effects on weight reduction objectives. Additionally, understanding the mind-sets of participants allows for more accurate evaluation of the trial findings' generalizability and predictability in real-world scenarios. This knowledge can provide valuable insights to healthcare practitioners and policymakers about the proper use of medication and its potential effects on public health [8-10].

The Role of Synthesis to Create These Mind-Sets

Artificial intelligence, particularly LLMs, large language models, may significantly help to understand the mind-sets of patients participating in clinical trials for prescription weight reduction medications. AI can effectively evaluate extensive data from many sources to recognize recurring themes and patterns in patient replies, aiding researchers to understand the attitudes and beliefs related to weight loss drugs. An extensive investigation may provide useful insights into patient preferences, concerns, and expectations, which can help to develop and market new treatments.

AI may also assist researchers to detect biases or misunderstandings which might occur during clinical trials, enabling them to address these problems beforehand. AI can forecast how people may react to alternative treatment choices by analyzing patient mind-sets, leading to better patient results. AI can optimize data processing and interpretation, saving time and money [11-14].

The Synthesis Exercise and the Results

The focus of this paper is to use LLM, the aforementioned large language model, to help us understand the mind of the patient participating in a clinical trial about weight loss drugs. The objective is to demonstrate that the LLM can provide didactics, help in educating the clinician, without making an effort to diagnose the patient. That is, the objective is to see what types of mind-sets exist among patients, doing so by simulation. From the simulation comes learning, based upon a set of targeted questions for each synthesized/simulated mindset.

We devised a set of nine questions for the LLM which required the model to comprehend and amalgamate material from various perspectives (see Table 1). By not telling the LLM anything about the mind-sets other than a number of them exist, we empowered the LLM to use its language processing skills to understand the prompt information in a more flexible and imaginative manner. This method necessitated the model to engage in critical thinking and provide insightful answers derived from the prompt's context and substance.

Table 1. The instructions given to the LLM to generate mind-sets and answer nine questions for each mind-set

We are working on clinical trials to test drugs which make people feel less hungry. We know that there are different mind-sets which respond to these drugs.

For each mind-set, answer the following questions, assuming that the study is with a test product.

- 1. What gets the mind-set to volunteer? Preface the answer with the specific words: REASON TO VOLUNTEER
- 2. What does the mind-set report before taking the test drug? Preface the answer with the specific words: PRE-TEST RE-PORT
- 3. What does the mind-set report after taking the test drug? Preface the answer with the specific words: POST-TEST REPORT
- 4. What is the mind-set thinking about the drug that the mindset is testing? Preface the answer with the specific words: THOUGHTS WHILE IN THE TEST
- 5. How can the mind-set tell whether the drug is working? Preface the answer with the specific words: IS IT WORKING?
- What concerns the mind-set if the test is really a placebo? Preface the answer with the specific words: CONCERNS RE PLACEBO
- 7. What is the prognosis for this mind-set in terms of weight loss? Preface the answer with the specific words: WEIGHT LOSS PROGNOSIS
- 8. Write a four-paragraph summary to describe this type of patient, if the information were to be submitted to the hospital records, and then published in the open scientific literature.
- 9. Write a four-paragraph summary to describe the internal mental and physical experience of this test patient.

The LLM synthesized information by examining questions and identified common themes that could be used across multiple views. The model used its extensive training data and language processing skills to extract pertinent information from the prompt and provide cohesive and logical solutions to all nine questions. The LLM compiled the replies in a userfriendly format, presenting them clearly and concisely for easy comprehension by a human reader. Tables 2A -2G show the profiles of these nine LLM-created mind-sets. This method is beneficial for education as it allows students to connect with the topics and viewpoints in a more engaging and participatory manner. By asking a sequence of questions which prompt the learner to use different cognitive frameworks, the LLM enables students to better comprehend the general topic. The LLM's capacity to combine and display information in a user-friendly manner enhances accessibility and engagement in learning, aiding students to understand, retain, and recall the issues more effectively, and presumably in a more engaging way.

Table 2A. Synthesized profile of the Resistant Mind-Set

A:RESISTANT MIND-SET

- 1. REASON TO VOLUNTEER: Seeking alternative options for weight loss
- 2. PRE-TEST REPORT: Skeptical about effectiveness of the test drug
- 3. POST-TEST REPORT: Reports feeling less hungry and more satisfied
- 4. THOUGHTS WHILE IN THE TEST: Wondering if the changes are sustainable long-term
- 5. IS IT WORKING? Notices reduced food cravings and decreased appetite
- 6. CONCERNS RE PLACEBO: Worried about potential side effects of the drug
- 7. WEIGHT LOSS PROGNOSIS: Moderate weight loss expected
- Patient X, a Resistant Mind-Set, was enrolled in a clinical trial testing the effectiveness of a hunger-suppressing drug. Initial skepticism was overcome by noticeable changes in appetite and reported feelings of satisfaction. The prognosis for weight loss is moderate, with potential concerns regarding placebo effects.
- 9. Throughout the trial, Patient X experienced a mix of doubts and hopes regarding the effectiveness of the test drug. Pre-test reports indicated a resistance to believe in the drug's potential, but post-test reports showed a significant reduction in hunger and increased feelings of fullness. This internal struggle highlights the complex nature of weight loss interventions and the importance of personalized approaches to address individual mind-sets.

Table 2B. Synthesized profile of the Highly Motivated Mind-Set

B: HIGHLY MOTIVATED MIND-SET

- 1. REASON TO VOLUNTEER: Seeking a solution for long-term weight management
- 2. PRE-TEST REPORT: Feeling frustrated with previous weight loss attempts
- 3. POST-TEST REPORT: Noticing reduced cravings and feeling more in control of eating habits
- 4. THOUGHTS WHILE IN THE TEST: Hopeful that this drug could be the answer to long-term weight management
- 5. IS IT WORKING? Observing decreased appetite and increased satiety
- 6. CONCERNS RE PLACEBO: Worried about potential weight gain if on the placebo
- 7. WEIGHT LOSS PROGNOSIS: Expected to see significant weight loss over time
- 8. SUMMARY: The highly motivated patient displays a strong determination to find a sustainable solution for weight management. Through participation in clinical trials for hunger-reducing drugs, they report feeling hopeful and more in control of their eating habits. The prognosis for weight loss is positive, with expectations of significant results.
- 9. INTERNAL EXPERIENCE: The highly motivated patient experiences a sense of frustration with previous weight loss attempts and a strong desire to find a solution for long-term weight management. During the clinical trial, they report feeling hopeful and noticing reduced cravings, leading to a more positive outlook on their weight loss journey. Through observation of decreased appetite and increased satiety, the patient feels more in control of their eating habits, ultimately leading to a promising weight loss prognosis.

Table 2C. Synthesized profile of the Motivated Mind-Set

C: MOTIVATED MIND-SET

- 1. REASON TO VOLUNTEER: The desire to lose weight and improve overall health
- 2. PRE-TEST REPORT: Feeling excited and hopeful about the potential effects of the test drug
- 3. POST-TEST REPORT: Noticing a decreased appetite and feeling more in control of food choices
- 4. THOUGHTS WHILE IN THE TEST: Believing that the drug is helping to curb cravings and promote weight loss
- 5. IS IT WORKING? Monitoring food intake and weight loss progress to determine effectiveness of the drug
- 6. CONCERNS RE PLACEBO: Worried that lack of noticeable effects may indicate being on a placebo
- 7. WEIGHT LOSS PROGNOSIS: Expected to see significant weight loss with continued use of the drug
- 8. The Motivated Mind-Set is characterized by individuals who are eager to make positive changes in their health and are willing to participate in clinical trials to achieve their weight loss goals. They report feeling excited and hopeful before taking the test drug, and after using it, they notice a decreased appetite and improved control over their food choices. The mind-set believes that the drug is helping them curb cravings and promote weight loss, and they closely monitor their progress to determine its effectiveness. However, they may have concerns about being on a placebo if they do not see noticeable effects.
- 9. The internal experience of the Motivated Mind-Set during the clinical trial involves a strong sense of determination and commitment to achieving weight loss. Physically, they may notice a decrease in appetite and reduced cravings for unhealthy foods. Mentally, they may feel more in control of their eating habits and experience a sense of empowerment in making healthier choices. Overall, the Motivated Mind-Set is focused on achieving their weight loss goals and is actively engaged in monitoring their progress throughout the trial.

Table 2D. Synthesized profile of the Skeptical Mind-Set

D: SKEPTICAL MIND-SET

- 1. REASON TO VOLUNTEER: The Skeptical Mind-Set may volunteer in order to prove to themselves and others whether or not the drug actually works.
- 2. PRE-TEST REPORT: The Skeptical Mind-Set may report doubts about the effectiveness of the test drug and may express concerns about potential side effects.
- 3. POST-TEST REPORT: After taking the test drug, the Skeptical Mind-Set may report any changes in appetite or weight and may express skepticism about whether these changes are truly due to the drug.
- THOUGHTS WHILE IN THE TEST: The Skeptical Mind-Set may constantly question the validity of the test drug and may be analyzing their own experiences to determine if the drug is truly working.
- 5. IS IT WORKING? The Skeptical Mind-Set may look for concrete evidence such as changes in weight or appetite to determine if the drug is actually making a difference.
- CONCERNS RE PLACEBO: The Skeptical Mind-Set may worry that they are receiving a placebo instead of the actual test drug and may question the legitimacy of the study.
- WEIGHT LOSS PROGNOSIS: The weight loss prognosis for the Skeptical Mind-Set may be uncertain, as their skepticism may affect their adherence to the drug regimen and ultimately their weight loss results.
- 8. SUMMARY FOR HOSPITAL RECORDS: The Skeptical Mind-Set is characterized by constant questioning and doubt regarding the effectiveness of the test drug, which may impact their overall weight loss prognosis. It is important to closely monitor their reactions and concerns throughout the study.
- 9. INTERNAL EXPERIENCE: The Skeptical Mind-Set may feel conflicted between wanting the drug to work for weight loss purposes and doubting its efficacy. This internal battle may affect their adherence to the drug regimen and ultimately their weight loss results. Physical experiences may include changes in appetite and weight, but these changes may be overshadowed by their skepticism.

Table 2E. Synthesized profile of the Believers in the Power of Medication Mind-Set

E: BELIEVERS IN THE POWER OF MEDICATION MIND-SET

- 1. REASON TO VOLUNTEER: Believers in this mind-set are motivated to volunteer by the hope that the medication will be their solution to weight management struggles.
- PRE-TEST REPORT: Before taking the test drug, Believers in the Power of Medication may express excitement and optimism about the potential benefits they may experience.
- 3. POST-TEST REPORT: After taking the test drug, Believers in the Power of Medication may report feeling satisfied with the results and attribute any changes to the medication.
- THOUGHTS WHILE IN THE TEST: This mind-set may constantly think about how the medication is helping them control their appetite and manage their weight.
- IS IT WORKING? Believers in the Power of Medication may feel confident that the drug is working based on their perception of reduced hunger and potential weight loss.
- 6. CONCERNS RE PLACEBO: The main concern for this mind-set would be discovering that they were in the placebo group, as they strongly believe in the efficacy of medication.
- 7. WEIGHT LOSS PROGNOSIS: Believers in the Power of Medication may have a positive prognosis for weight loss, as they are likely to adhere to the treatment regimen.
- 8. SUMMARY FOR HOSPITAL RECORDS AND SCIENTIFIC LITERATURE: Believers in the Power of Medication are highly motivated to try new treatments for weight loss, particularly medications. They express optimism and positivity before and after taking test drugs, attributing any changes to the medication. Their main concern is the possibility of being in the placebo group, as they strongly believe in the effectiveness of medication. In terms of weight loss prognosis, they are likely to have a positive outcome due to their adherence to treatment.
- 9. INTERNAL EXPERIENCE: A person in this mind-set is likely to experience a significant reduction in feelings of hunger after taking the test drug. Physically, they may notice a decrease in the frequency and intensity of hunger pangs, as well as a diminished desire to snack between meals. Mentally, they may feel more in control of their eating habits, experiencing a sense of empowerment and motivation to make healthier food choices. Overall, the test patient feels satisfied and content with their reduced appetite, leading to a potential improvement in their overall well-being and weight management goals

Table 2F. Synthesized profile of the Rational Thinker Mind-Set

F: THE RATIONAL THINKER MIND-SET

- 1. REASON TO VOLUNTEER: The Rational Thinker volunteers for the clinical trial to scientifically analyze the effectiveness of the test drug and to contribute to the advancement of medical research.
- 2. PRE-TEST REPORT: The Rational Thinker reports feeling skeptical but hopeful before taking the test drug, expressing hesitance towards potential side effects but also excitement about the possibility of reduced hunger.
- 3. POST-TEST REPORT: The Rational Thinker reports carefully documenting their experiences and changes in hunger levels after taking the test drug, providing detailed feedback for the researchers.
- 4. THOUGHTS WHILE IN THE TEST: The Rational Thinker critically evaluates the efficacy of the test drug, comparing it to existing scientific literature and considering potential mechanisms of action.
- 5. IS IT WORKING? The Rational Thinker monitors their hunger levels, weight fluctuations, and any changes in eating habits to determine if the drug is effectively reducing appetite.
- 6. CONCERNS RE PLACEBO: The Rational Thinker may be concerned about potentially receiving a placebo and not experiencing any actual effects of the test drug, affecting their ability to accurately assess its efficacy.
- 7. WEIGHT LOSS PROGNOSIS: The Rational Thinker's prognosis for weight loss depends on the effectiveness of the test drug, with a potential for significant weight loss if the drug successfully reduces hunger.
- 8. The Rational Thinker is a highly analytical and research-oriented patient who approaches the clinical trial with skepticism and curiosity. Known for their meticulous documentation and critical thinking skills, this mind-set is valuable for providing detailed feedback during the study. The Rational Thinker's dedication to scientific accuracy and data-driven conclusions makes them a reliable participant for clinical trials evaluating appetite-suppressing drugs. Their contributions to medical research can potentially lead to breakthroughs in the treatment of obesity and related conditions.
- 9. The Rational Thinker experiences a mix of skepticism and hope before and during the test of the appetite-suppressing drug. Their internal mental dialogue revolves around a careful analysis of the drug's effects, comparing their experiences with existing scientific knowledge. Physically, they may experience changes in hunger levels and eating habits, which they meticulously document for the researchers. The Rational Thinker's internal experience is characterized by a constant evaluation of the drug's efficacy and potential impact on their weight loss journey.

Table 2G. Synthesized profile of the Overeater Mind-Set

G: THE OVEREATER MIND-SET

- 1. REASON TO VOLUNTEER: The mind-set volunteers because they struggle with overeating and are looking for a solution to help them control their appetite.
- 2. PRE-TEST REPORT: The mind-set reports feeling constantly hungry, having intense cravings, and struggling with portion control.
- 3. POST-TEST REPORT: The mind-set reports feeling more satisfied after meals, experiencing fewer cravings, and finding it easier to control their food intake.
- 4. THOUGHTS WHILE IN THE TEST: The mind-set is thinking about how the test drug could potentially be a game changer for their weight loss journey and how it could help them lead a healthier lifestyle.
- 5. IS IT WORKING? The mind-set can tell the drug is working based on their decreased hunger levels, reduced cravings, and improved ability to regulate their food intake.
- CONCERNS RE PLACEBO: The mind-set is concerned that the test drug may be a placebo if they do not see any significant changes in their appetite or weight.
- WEIGHT LOSS PROGNOSIS: The prognosis for weight loss in this mind-set is positive, as they are more likely to experience successful weight management with the help of the drug.
- 8. SUMMARY FOR HOSPITAL RECORDS AND SCIENTIFIC LITERATURE: The Overeater Mind-Set is characterized by constant hunger, intense cravings, and struggles with portion control. They volunteer for clinical trials in search of a solution to help them control their appetite. After taking the test drug, they report feeling more satisfied after meals, experiencing fewer cravings, and finding it easier to control their food intake. The prognosis for weight loss in this mind-set is positive.
- 9. INTERNAL MENTAL AND PHYSICAL EXPERIENCE: The Overeater Mind-Set experiences a constant battle with hunger, cravings, and portion control. They often feel guilty and ashamed of their eating habits, leading to a cycle of overeating and weight gain. However, after taking the test drug, they feel a sense of relief and hope as they notice a decrease in their hunger levels and cravings. They feel more in control of their food intake and are motivated to make healthier choices. Mentally, they are more at peace knowing that there is a potential solution to their struggles with overeating. Physically, they feel lighter and more energized as they begin to see positive changes in their weight and overall health.

Creating Stories

Doctors and pharma firms use AI to create narratives of persons involved in a medication study, allowing them to get important information about the efficacy as well as negative effects of a treatment. AI can analyze a vast dataset of patient experiences to detect patterns and trends that may not be readily apparent using conventional approaches. If a significant percentage of patients in these synthesized stories are shown to report a certain adverse effect after medication administration, AI may identify and highlight this concern for more scrutiny.

Utilizing AI to create narratives of participants in a drug trial may provide physicians and pharmaceutical corporations an abundance of "insights" to enhance the advancement and efficacy of new drugs. Researchers may enhance their knowledge of how medications interact with people and find characteristics that affect treatment results by paying close attention to the stories [15,16].

Table 3 shows three synthesized stories about subjects participating in the weight loss drug trial. The LLM was instructed simply to tell a story about the topic. The three stories are shown as they emerged from the LLM synthesis. It is important to understand that whereas the stories are synthesized, the reader gets a sense that this could be a real person and can thus become more sensitive to what might be going on in the mind of the patient volunteer.

Table 3. Three synthesized stories about subjects participating in the weight loss drug trial

STORY 1:

As Sarah sat in the doctor's office awaiting the results of her weight loss drug trial, her mind was racing with a mix of hope and worry. "I've worked so hard to stick to the study guidelines, I really hope this drug is the real deal," she thought to herself. But a nagging voice in the back of her mind questioned whether she had received the active drug or just a placebo. "What if all this effort was for nothing?" she wondered.

When the doctor finally entered the room and revealed that Sarah had indeed been taking the active drug, a wave of relief and excitement washed over her. "I can't believe it actually worked," she exclaimed. But as she left the office, doubts crept back in. "Will the weight stay off once the trial is over? Will I be able to maintain my progress?"

STORY 2:

Mark had been participating in the weight loss drug trial for months, diligently following the study protocol and monitoring his progress. But as the end of the trial neared, he couldn't shake the feeling of disappointment. "What if I've been taking a placebo this whole time? What if I don't see any results?" he questioned.

When the doctor informed Mark that he had indeed been taking the active drug, his initial joy was quickly overshadowed by a sense of apprehension. "What if the side effects are too much to handle in the long term? Will I have to rely on this drug forever to maintain my weight loss?" These thoughts consumed him as he left the office that day.

STORY 3:

For Emily, the weight loss drug trial had been a rollercoaster of emotions. She had started off hopeful, believing that this could be the solution she had been searching for. But as the weeks went by without any noticeable changes, doubt began to creep in. "Maybe I was given the placebo. Maybe this drug isn't as effective as they claim," she mused.

When the doctor revealed that Emily had been taking the active drug, she was stunned. "I can't believe it actually worked," she marveled. But as she reflected on her journey, a new worry surfaced. "Will I become dependent on this drug to maintain my weight loss? What happens if it stops working in the future?"

Using the Synthesis Approach for Education Purposes

Weight loss drugs have long been a subject of interest in the medical industry as a potential solution for individuals struggling with obesity. By utilizing large language models, LLMs, to synthesize mind-sets for weight loss drugs, researchers can gain valuable insights into the psychological factors which influence an individual's likelihood of success with these medications. This information can ultimately help doctors tailor their treatment plans to better meet the needs of their patients.

Being able to synthesize mind-sets is special because it allows for a deeper understanding of the complex interplay between psychological factors and weight loss success. This holistic approach can lead to more effective treatment strategies that address both the physical and emotional aspects of weight loss, leading to better overall outcomes for patients.

For patients, having their mind-set synthesized can help them to understand their own thought patterns and behaviors when it comes to weight loss. This awareness can empower patients to make healthier choices and stick to their treatment plans more effectively, ultimately leading to more successful outcomes in their weight loss journey.

One of the key benefits of synthesizing mind-sets for weight loss drugs is the potential for doctors to have a better understanding of their patients' motivations and challenges when it comes to losing weight. By taking into account factors such as mind-set, beliefs, and attitudes towards weight loss, doctors can provide more personalized care and support to their patients, leading to potentially better outcomes in the long run. Sensitization is also key in the process of synthesizing mindsets for weight loss drugs. By sensitizing doctors to the unique needs and challenges faced by their patients, researchers can help to foster a more empathic and understanding approach to care that is tailored to the individual needs of each patient.

Finally, education plays a crucial role in the synthesis of mind-sets for weight loss drugs. By educating doctors on the importance of mind-set in weight loss success and providing them with the tools and resources to assess and address these factors, researchers can help improve patient outcomes and overall success rates.

Conflicts of interest

The authors have no conflict of interest to disclose.

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References

- Buckley JM, Irving AD, Goodacre S. How do patients feel about taking part in clinical trials in emergency care?. Emergency Medicine Journal. 2016;33(6):376-380.
- 2. Lidz CW, Appelbaum PS, Grisso T, Renaud M. Therapeutic misconception and the appreciation of risks in clinical trials.

Social science & medicine. 2004;58(9):1689-1697.

- Verheggen FW, Nieman F, Jonkers R. Determinants of patient participation in clinical studies requiring informed consent: why patients enter a clinical trial. Patient education and counseling. 1998;35(2):111-125.
- Brédart A, Marrel A, Abetz-Webb L, Lasch K, Acquadro C. Interviewing to develop Patient-Reported Outcome (PRO) measures for clinical research: eliciting patients' experience. Health and quality of life outcomes. 2014;12:1-10.
- 5. Chin R, Lee BY. Principles and practice of clinical trial medicine. Academic Press. 2008
- Hellman S, Hellman DS. Of mice but not men: problems of the randomized clinical trial. New England Journal of Medicine. 1991;324(22):1585-1589.
- 7. Jadad AR, Enkin MW. Randomized controlled trials: questions, answers and musings. John Wiley & Sons. 2007.
- Dauber MS. Mechanisms and Mind Sets: The Roles of Terminology and Patient Mind Set in Clinician Truth-Telling and Placebo Use. AJOB Neuroscience. 2018;9(3):202-204.
- Moskowitz H. 'Diabesity'–Using Mind Genomics thinking coupled with AI to synthesize mind-sets and provide direction for changing behavior. American Journal of Medical and Clinical Research & Reviews.2024;3(3):1-13.
- Schleider JL, Weisz JR. Parent expectancies and preferences for mental health treatment: the roles of emotion mind-sets and views of failure. Journal of Clinical Child & Adolescent Psychology. 2018;47(sup1), S480-S496.
- Kumar Y, Koul A, Singla R, Ijaz MF. Artificial intelligence in disease diagnosis: a systematic literature review, synthesizing framework and future research agenda. Journal of ambient intelligence and humanized computing. 2023;14(7):8459-8486.
- Morley J, Morton C, Karpathakis K, Taddeo M, Floridi L. Towards a framework for evaluating the safety, acceptability and efficacy of AI systems for health: an initial synthesis. arXiv preprint arXiv:2104.06910. 2021
- Wiehe SE, Moore CM, Lynch DO, Claxton G, Bauer NS, Sanematsu H. "Research Jam": Engaging patients and other stakeholders through human-centered design to improve translational research. Journal of Clinical and Translational Science. 2023;7(1):e17.
- 14. Zhang G, Jin Q, Jered McInerney D, et al. Leveraging generative AI for clinical evidence synthesis needs to ensure trustworthiness. J Biomed Inform. 2024;153:104640.
- Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O, Peacock R. Storylines of research in diffusion of innovation: a meta-narrative approach to systematic review. Social science & medicine. 2005;61(2):417-430.
- Slavin RE. Best evidence synthesis: an intelligent alternative to meta-analysis. Journal of clinical epidemiology. 1995;48(1):9-18.