Research Article

The Prevalent Cognitive Beliefs towards the *(Covid-19)* Pandemic and Its Relationship to the Health Behaviour among Saudi Society Members

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Abstract

This study aimed to reveal the relationship between the prevailing cognitive beliefs during the Covid 19 pandemic among members of the Saudi society. It also aimed to identify the most prevalent cognitive beliefs towards the Covid 19 pandemic among the target study group. Moreover, it attempted to know the pattern of health behavior followed during the pandemic, and to identify the differences in the prevailing cognitive beliefs during the ongoing pandemic as well as the pattern of healthy behavior according to a number of variables (age, gender, place of residence, health status, educational level, specialization, economic status). It is also an attempt to determine the level of relative contribution to predicting the health behavior followed towards the Covid 19 pandemic through the prevailing cognitive beliefs of the study members. The study sample included (847) participants from all members of the Saudi community, who responded to the study tools after verifying their psychometric properties. The results of the study indicated that there are apparent differences in the arithmetic means and standard deviations. The highest arithmetic mean was the cognitive beliefs related to the plot, with an arithmetic mean of (24.15), and the total arithmetic mean of the cognitive beliefs was (84.82) at a high level. With regard to the most prevalent dimensions of healthy behavior, the highest arithmetic means were the psychological and social dimension, with an arithmetic mean of (48.34). Moreover, the total arithmetic mean of healthy behavior was (120.52) at a high level. The results reflected a negative relationship between the prevailing cognitive beliefs during the pandemic and health behavior, and the presence of relationships between the dimensions of the two scales, the absence of differences in the prevailing cognitive beliefs during the Covid 19 pandemic among community members according to the gender variable, health status, and the level of economic income on all dimensions of the scale and the total degree of cognitive beliefs except for the second dimension, where the differences were in favor of males compared to females. It was noted that there are differences in the age variable on all dimensions of the prevailing cognitive beliefs during the pandemic and the overall degree of the tool. The differences were in favor of individuals whose age reached (20-29) years in the first dimension, and in the rest of the dimensions and the total degree. Such differences were according to those aged (40-49) years and over. There were also differences in the scientific specialization and in favor of those with legal specializations compared to the rest of the other groups. There were no statistically significant differences according to the variable of age, gender, and educational level on all dimensions and the overall degree of health behavior, and there were differences in the educational level variable on the health care dimension in favor of those with higher educational level compared to other categories. No differences were found on the other dimensions. Finally, with regard to the level of economic income, the differences came only in the third dimension, taking drugs and medicines in favor of those with income ranging from (10-19) thousand riyals per month compared to other groups. The results showed the possibility of predicting health behavior through the prevailing cognitive beliefs during the pandemic, with an explanation rate of variation that amounted to (-20.2-). It is followed by cognitive beliefs related to conspiracy and cognitive beliefs with a bias towards pessimism.

Keywords: Prevalent cognitive beliefs during the COVID-19 pandemic; Health behavior

Introduction

There have been many news reports that many people are not taking (COVID-19) seriously, and misinformation has spread about it, suggesting that believing in harmful misconceptions may contribute to this problem given that having a generally accurate understanding of the risks posed by COVID-19 is supposed to be a central first step toward the behavioral changes needed to save lives. It is therefore important to understand why people have different opinions about it. This also provides an opportunity to test psychological theories about political polarization and scientific beliefs [1]. It is indicated that more than (60%) of disorders in mental health services are for vulnerable people, including children and adolescents (72%), the elderly (70%) and women who need prenatal or postnatal services (61%), and (67%) noted disturbances during counseling and psychotherapy; (65%) for critical damage reduction services and (45%) to preventive treatment. Many countries (70%) have adopted telemedicine or telemedicine to overcome interruptions in personal services, but there are large disparities in the uptake of these interventions. Behavioral restrictions such as quarantine and loss of contact with family members and friends impose different levels of isolation on people and cause stress. The effects of different stresses on cognitive performance in different cognitive fields such as risk perception, working memory, attention, decision making, problem solving, and emotional control have been demonstrated. With the start of the global declaration of the emergence of the Covid-19 pandemic, societies were forced to take new measures to reduce the rate of infection, as ordinary people were asked to adopt enhanced preventive health behaviors, such as: Physical distancing and frequent hand washing. However, along with these official recommendations, people are exposed to pseudoscientific information, cognitive beliefs and unverified content related to COVID-19, as it spreads through social media. Fake news spreads faster and easier, and it is just as dangerous. Fake news spreads faster and easier, and is just as dangerous." False scientific recommendations such as eating garlic, drinking ginger tea, or cleaning the nose with saline to prevent infection are becoming very common. Adherence to official public health recommendations and the use of healthy behavior as a set of irrational beliefs may be included, referring to irrational beliefs as an umbrella term covering beliefs that lack a strong evidence base or challenge normative rationality principles, for example, beliefs about the paranormal, conspiracy beliefs, or Attitudes against science. Cognitive biases, as a systematic departure from normatively defined rational behavior, can be viewed as a relatively broad category of irrational beliefs given that the range of cognitive biases is highly heterogeneous. Some previous studies have referred to different behavioral models to explain protective behaviors at the individual level, such as: Action theory, health belief model, social cognitive model, and extended parallel process model. Based on these models, the researchers identified a set of factors that lead to an individual practicing effective protective behavior during a pandemic, such as: Risk perception, self-efficacy, negative emotions such as fear and sadness, knowledge, conspiracy cognitive beliefs, socioeconomic status, and in the early pandemic stage. A number of studies have been conducted to identify factors that predict protective behaviors in China. Knowledge and concerns about COVID-19, optimistic attitudes, perceived risk of illness, trust, support, and healthy behavior were found to be significantly associated with the likelihood of practicing the highest levels of precautionary measures to prevent infection. Cognitive health behavior theories hold that a number of beliefs and attitudes are responsible for adopting protective behavior as a person balances precautions. Beliefs provided an ideal target because they carry individual characteristics that influence behavior and can be modified. Beliefs may reflect the different nature of socialization arising from demographic differences and, at the same time, differentiation between individuals, the use of persuasive methods to change beliefs associated with health behaviors and such interventions have led to health behavior change. This will provide a theory-based technology for health education. Based on the foregoing, the diversity of cognitive beliefs during the (Covid-19) pandemic is linked to the health behaviors that appeared on many individuals in society, where some complications such as delirium, agitation and stroke may appear. People with mental, neurological, or pre-existing disorders are also at greater risk of the consequences and effects of healthy and protective behaviors.

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Problem of the study

Health psychology focuses on the study of psychological and behavioral processes in health, disease, and health care, and understanding the impact of physical health on psychological aspects such as anxiety, illness fears, stress, fears of infection, and illness anxiety, and that health is not a product of biological processes only (virus or tumor), but It is a product of psychological states such as thoughts, beliefs, and behavior. Renko and others see that healthy behavior and the development of cognitive beliefs help individuals lead healthy lives by developing and operating programs that can help to make changes in their lives such as eating healthy food and exercising regularly. Health Beliefs also contribute to shaping psychological, behavioral and social factors, and maintaining health through several indicators represented in developing healthy habits such as commitment to maintaining a healthy regime, following up on health status, exercising, and avoiding smoking, alcoholic beverages, drugs and other harmful substances. The results of studies that dealt with cognitive beliefs from different sides, and in multiple environments, indicated the variation of the sample members and the variables that were studied, such as the study of emphasized the justified relationship between cognitive beliefs and healthy behavior, and the impact of the individual's cognitive beliefs on his behavior in general and health behavior in particular in light of the spread of the Covid-19 pandemic in the current circumstances in particular [2,3]. This is also confirmed by some cognitive theories, such as the theory of Aaron Beck and the theory of rational emotive therapy by Albert Ales, which clarified that the way of thinking that an individual has

affects his behavior, his feelings and the way he perceives his surroundings in society, as well as the model of beliefs, health, and the theory of planned behavior, which indicates the role of cognitive beliefs in guiding the behavior of the individual in general, and his healthy behavior and following a certain pattern in particular [4]. Accordingly, the problem of the current study crystallized from the results of previous studies, which confirmed that cognitive beliefs are directly related to health behaviors, and the possibility of predicting healthy behavior through the method of perception and cognitive perceptions of the individual, which is reflected in his actions and behaviors that he performs periodically. In addition, the problem of the study crystallized from the reality of applied and practical experiences during the provision of psychological (telephone) counseling to individuals during the pandemic (Covid-19), the impact of cognitive structures and beliefs on the health behavior that the individual practices in different ways became clear to the research team through their experience.

The current study seeks to answer the following questions:

- What are the most common cognitive beliefs among a sample of Saudi society members towards the COVID-19 pandemic?
- What are the most common patterns of healthy behavior among a sample of Saudi society members towards the COVID-19 pandemic?
- Is there a relationship between the prevailing cognitive beliefs about the Covid-19 pandemic and the health behavior of a sample of Saudi society members?
- Are there differences in the prevailing cognitive beliefs about the COVID-19 pandemic among a sample of Saudi society members according to a number of demographic variables (age, gender, place of residence, health status, educational level, specialization, and economic status)?
- Are there differences in the health behavior of a sample of Saudi society members according to a number of demographic variables (age, gender, place of residence, health status, educational level, specialization, and economic status)?
- Can the health behavior of the Covid-19 pandemic be predicted through the cognitive beliefs prevalent among the study members?

Methods

Significance of the study

The importance of the theoretical study stems from the variables it deals with, as the current study is of particular importance on the theoretical level. It aims to identify the prevailing cognitive beliefs towards the Covid-19 pandemic. Its importance stems from its variables and objectives that it seeks to achieve, the nature of the relationship between the two variables and the impact of each on the other, and being a new addition to the scarcity of Arab and local studies that reveal the relationship between the two variables (the prevalent cognitive beliefs during the pandemic (Covid-19), health behavior) among a sample of Saudi society members-within the limits of knowledge-especially with regard to health psychology, in addition to highlighting the importance of studying the health behavior of the target study group, and identifying the prevailing cognitive beliefs about the pandemic in light of their varying cultural, social and economic backgrounds, which result in different behavioral practices and procedures towards mental health and the prevention of the development of mental illnesses in patients, which is reflected in their health practice. On the practical side, the results of the current study may contribute to defining the prevailing cognitive beliefs towards the (Covid 19) pandemic, drawing the attention of those interested and decision-makers to the level of health behavior and practices related to it, and working on developing appropriate plans to ensure what can contribute to the health behaviors followed towards the Covid-19 pandemic, and opening the way for researchers to study these variables and the importance of studying them in health psychology as well as directing research to design preventive and extension programs to educate the target group about the prevailing cognitive beliefs during the Covid-19 pandemic. The results of the study provide some standards and tools that are directly related to some psychological variables, and highlight the importance of the applied study in opening the way for more field studies, whether at the local community level, or in similar environments and societies, and holding workshops on the importance of prevailing cognitive beliefs towards the Covid-19 pandemic and healthy behavior in this regard.

Terminology of study

Prevailing epistemological beliefs: Kertch and Crutchfield, 1948, referred to in Khalifah, define the belief as a stable organization of perceptions and knowledge about a specific aspect of an individual's features, or a pattern of meanings for an individual's knowledge about a specific thing. Beliefs are defined procedurally as “all the positive or negative behaviors that the individual does that stem from his cognitive structures towards the aspect, perceptions and expectations about a specific topic, and behaviors that care about safety in what he thinks and what he is aware of.” It is measured by the total score obtained by the respondent on the scale used in the current study [5].

Healthy behavior: The definition of healthy behavior was adopted from the definition of the author of the tool Al Rayahneh (2018) "any activity carried out by the individual and believed to be healthy, and aims to prevent the occurrence of disease, and prevent it at any stage. These activities include people's health experiences, such as eating healthy food, frequent brushing of the teeth, non-smoking, sleep between (7-8) hours a day, and exercise and physical activity. It is measured by the degree that the respondent will obtain on the Health Behavior Scale which is prepared by Al-Rayhahneh.

Covid-19 Pandemic: The World Health Organization (WHO) (2020) defines a it as “the disease caused by the emerging coronavirus called SARS-CoV, first discovered on December 31, 2019, after cases of viral pneumonia were reported, described as rapidly spreading, and its most important symptoms are shortness of breath, clots in the lung, high temperature, feeling tired, and headache, and the term (Covid-19) is the abbreviation of (Corona Virus Disease).

Limitations of the study

The subject of the current study was limited to the objective limits of the prevailing cognitive beliefs and health behavior, according to their demographic characteristics. The program application period extended during the second semester of the academic year 2020-2021. The target group, whose generalization of results can be limited to the target group in the current study, was the members of Saudi society in Riyadh.

Theoretical background and previous studies

The world was shaken by the emergence of the new Corona virus, as the World Health Organization (WHO) declared it (2020) as a global pandemic under the name (Covid-19 pandemic), with the number of confirmed cases and deaths resulting from it and continuing to rise. As a result of this epidemic, some psychological effects have appeared, including anxiety, stress, depression, and symptoms of Post-Traumatic Stress Disorder (PTSD) associated with quarantine. Some studies that have examined the manifestations and psychological impact of the Middle East Respiratory Syndrome (SARS) have shown an increase in stress levels, memory impairment, symptoms of depression, anxiety, psychosis, sleep disturbances, suicidal behavior, and the persistence of such symptoms in the long term. The infection with these disorders and mental illnesses recorded a percentage of (16.5%). Despite the severity of the pandemic on society in general and the infected persons in particular, the world health organization (2020) indicated that the rate of recovery through medical intervention after infection with this pandemic (93%) and (80%) of the infected without undergoing treatment, and the infected need (20) days to recover from infection. In the environment of the current study, the Saudi Ministry of Health (1442) indicated that the recovery rate exceeded (97%) of the infected. There are some factors and variables affecting the psychological and health status of the infected, including: The age of the affected individual, his health condition, his chronic diseases, the level of health care provided, and the severity of his symptoms, well as the pattern of healthy behavior followed.

First: The prevailing epistemological beliefs about the Covid-19 pandemic

A cognitive belief is defined as a real attitude and considered to be the simplest form of mental representation. For a belief to be true, it must be based on reality and evidence. Beliefs that are not substantiated by evidence or that conflict with current knowledge or natural concepts of the world are categorized as cognitively suspect beliefs. The relationship between epistemologically questionable beliefs and scientific thinking is reflected in three integrated research aspects: First, there are studies that show that people with better scientific thinking have beliefs that are more consistent with scientific consensus. Second, better scientific thinking skills are rooted in the understanding that the scientific method is the best known method of acquiring beliefs and knowledge that most accurately reflect the world. People with better scientific thinking understand the science process better. Third, people with better scientific thinking tend to have fewer cognitively questionable beliefs, and cognitive beliefs in health-related behavior are broadly one of the most influential models as cognitively questionable beliefs on health-related behavior are more evident in pseudoscientific theories, where belief in the efficacy of ineffective treatments can lead to poorer health choices, such as refusing vaccinations or conventional treatments, pseudo-scientific explanations which are often correlated with conspiracy theories, other magical beliefs and superstitious thinking[6]. The cognitive beliefs model identifies the main factors that influence health behaviors as the individual's perceived threat to illness or disease (perceived susceptibility), belief in the outcome (perceived distress), potential positive benefits of action (perceived benefits), and perceived barriers to action [7]. Cognitive beliefs are an important factor in predicting health behavior for knowledge and understanding of the nature of disease. It was found that limited or inadequate health education was associated with lower adoption of preventive behaviors, showing that poor mental models influence on the uptake of hand hygiene in hospitals. Cognitive beliefs are defined by Misra and Kaster, 2012 as "what people believe about their health, what they believe constitutes their health, what they consider to be the cause of their illness, and ways to overcome illness. These beliefs are culturally specific, all of which combine to form belief systems. Greater health, and different cultures have different definitions of what constitutes health, and what causes disease. Health culture itself can be defined in many ways, but it is essentially the characteristics that make up a set of people's lifestyle, such as: attitudes, beliefs and practices, and health beliefs influence on health behaviors and health outcomes." Beliefs are generally defined as convictions that things in the mind are true, if individuals believe that certain principles are likely to be true, and beliefs in their simplest forms can also form the basis of behavior. There are several theories that dealt with cognitive beliefs, including:

Theory of planned behaviour

Ajzen Theory of Planned Behavior (TPB) is one of the main examples of predicting the behavior of individuals based on their beliefs and attitudes. It is originally based on Rational Action Theory (TRA), which emphasizes predicting behavior through attitudes and subjective criteria [5]. According to the theory of planned behavior, attitudes, subjective norms, and perceived behavioral control act as determinants of behavioral intention, which in turn influence behavior. Attitude refers to the positive or negative evaluation by an individual of a particular phenomenon or action because it persists for a long time once formed. Attitude often serves as a meaningful indicator of an individual's behavioral intention. Subjective norms refer to social pressures that encourage or discourage individuals from taking a particular action. The theory of planned behavior has been commonly used in various disciplines, such as psychology, medicine, marketing, physical education, and tourism [8,9]. The researchers have tried to include additional variables in the theory of planned behavior to increase its strength explanatory for the most accurate prediction of behavior. The situation of the COVID-19 pandemic has caused multiple disruptions, limiting current norms and creating a need to anticipate future behavior. Cognitive effects are: Effects related to aspects of thinking and ways, and cognitive beliefs that individuals suffer about the pandemic, and may include distortions and non-adaptive cognitive structures that they have in addition to the fact that

some negative thoughts and ways of thinking are not positive. Behavioral effects: Which relate to aspects of changing life behavior or the pattern of individual and collective behavior and behaviors related to the individual's professional, social, and daily life system, individual habits, and traditions. Previous research has shown that perceived risk determines the situation, which in turn influences behavioral intention [5]. The perception of risk has also been found to be an important precedent for subjective norms and perceived behavioral controls. In general, lower levels of risk lead to a positive attitude, the greater the degree to which individuals believe that their family or friends will display a positive attitude toward the intended behaviors, and an intense perception of their own abilities to perform the intended action. Cognitive and emotional beliefs are predictive of health behaviors and can be interfered. These beliefs are also associated with protective behaviors for health threats that are very similar to the outbreak of COVID-19. Notably, other disease outbreaks show different relationships between perceived risk, anxiety, and behavior. For example during the Ebola outbreak, anxiety was associated with more health-preventive behavior while perceived risk was actually associated with less protective behaviour. This classic pattern can appear in cross-sectional data as individuals evaluate their judgments of current risk on their behaviour. These findings demonstrate that it is important to explore these associations during each outbreak of a new disease, as the relationships are not completely consistent. Perception and feelings about disease risks may have interactive effects on health behaviors.

Healthy behaviour

The health belief model was developed by a group of social psychologists from the US Public Health Service in the 1950s, with the aim of understanding people's resistance to accepting preventive health measures or tests for early detection of asymptomatic diseases, as an indicator of preventive behavior. It has four dimensions: Susceptibility, severity, benefits, and barriers. These add to the subjective perceptions of each person/family and interfere with the decision-making process. The model works by suggesting dimensions intended to explain decision-making in relation to recommended actions in the field of health forces, and examines behavior in terms of perceived threats, whether it stemmed from the realization and motives of each of them or not. Pathological behavior varies according to individual interests and incentives, as well as according to social characteristics (gender, age, marital status, class affiliations or social groups) that play a decisive role in varying behaviors and therapeutic practices. Pathological behavior is defined as a complex of responses to the signs and symptoms of the disease and the associated perceptions and information, and the ability to understand and sense it. The stage of investing "the person with the disease" with the signs and symptoms of the disease is one of the most accurate stages that works to standardize the disease. It is ultimately related to the human relationship and cultural understanding of his body and to other social systems. The Health Belief Model (HBM) was first introduced in the 1950s by social psychologists in the US Public Health Service, and has been widely used as a conceptual framework to explain healthy behaviors. An individual's physical health or any behavior that an individual believes may affect his or her physical health. Perceived health risk is one of the main factors that encourage individuals to engage in health-promoting behaviors, and this model relied on the cognitive theory (Lewin) in contrast to the stimulus response theory which claims that repetitive behaviors result from an individual receiving an immediate reward after a particular behavior. Cognitive theory emphasizes the role of subjective value of outcomes as well as subjective expectation of outcomes following behavior. When applied to health behaviors, it can be assumed that an individual who values avoidance of health risks also expects that a particular health-promoting behavior will reduce this risk [10]. It should be noted that healthy behavior depends on different types of risk perceptions (deliberative, emotional and experiential). The accuracy of these perceptions varies according to social aspects (gender, age, education and place of residence). The application of social cognition theories has shown promise in providing an understanding of the determinants of protective behaviors as they help identify modifiable factors that have been shown to be reliably related to the behavior, and shape the content and design of behavioral interventions aimed at promoting increased adherence to protective behaviors in health context.

Explanatory models for healthy behaviour

Health convictions model: According to the theory, healthy behavior stems from within the person and appears in the form of behaviors through which the individual expects to achieve his goals of maintaining health. These behaviors differ from one individual to another according to the influence and interaction with the surrounding socio-environmental variables.

Reasonable action model: The reasonable action model focuses on the formation of specific intentions for behavior, and these intentions are determined according to the individual's own tendency towards behavior in which he has a degree of doubt, and determining the personal standard of the individual, and there must be a conviction from the person himself that he has the ability to do the desired behaviour.

The stages of change model: It sees that change can only take place through motivation, and takes place through five stages represented in the pre-contemplation stage in which the individual realizes the existence of a problem. Then he begins to make a decision to change behavior during the contemplation stage, and then resolves the intention and intention to change behavior during the stage of preparation. Through the implementation stage, the actual change in behavior occurs, then the maintenance stage, which is the stage of maintaining the current change in behavior.

Previous studies

Previous studies that dealt with the variables of the study were read and presented according to their latest chronological arrangement. Conducted a study on cognitive bias, optimism, pessimism, magical beliefs and conspiracy theories and pandemic-related beliefs among the Jordanian population [5]. The study sample included (2544) participants from the population. The results of the study indicated that the most false beliefs were beliefs related to conspiracy theory, and the least common of these beliefs were magical beliefs, and females were higher in misconceptions than male participants who attended a lecture

on the Corona virus, or obtained a higher level of education, and the participants who used social media as a source of information reflected higher rates of misconceptions than participants who did not use social media as a source of information.

Conducted a study on the illogical predicting ability of beliefs and the response ability to some wrong concepts. The research sample included a number of 407 participants who met the terms of participation in the study. Such terms included washing hands, social distancing and the number of times they participated in some misconceptions such as eating garlic or gargling, and their intention to receive the vaccine. The results of the study indicated that cognitive beliefs predict the health behaviors and practices of individuals, and the results showed that cognitive biases predict a high degree of commitment, and the use of some misconceptions, and the results showed an important relationship between irrational beliefs and healthy behaviors. In order to identify the ability of epistemological beliefs to predict precautionary behavior during a pandemic. A study focused on examining the cognitive processes underlying health prevention behavior such as (regular hand washing, social distancing, mask wearing, proactive thinking, intuitive thinking, disciplined thinking, tendency to take risks and worry about the pandemic. The study sample consisted of (300) participants in the United States of America. The results of the study indicated the predictive ability of cognitive beliefs in precautionary behaviors and in reverse, as people with a low level of positive cognitive beliefs practiced precautionary behaviors more than those with positive beliefs about the pandemic, and the results showed a rise in health precautionary beliefs and behaviors according to the age variable and in favor of the elderly. Conducted a study that aimed to identify the role of individuals' attitudes and emotional responses to practicing healthy behaviors such as: Hand washing as predictors of COVID-19-related changes in hand washing behavior, future intentions, and willingness to change during the early stage of the epidemic in the United States [11]. The study sample consisted of (344) community members. The results indicate that strong emotional responses to hand washing are related to the increase in hand washing since the outbreak of COVID-19, and each of the individuals clearly predicts the practice of healthy behaviors such as continuous hand washing, and the existence of a relationship between affection and willingness to change. Moreover, the results indicated that those with low income were more affected by both emotional responses and attitudes. These findings suggest that messages targeting both cognition and emotional responses are essential to increasing hand-washing behavior during a global pandemic and that these variables are critical in increasing the willingness to change in low-income individuals.

The role of some preventive practices in predicting cognitive beliefs towards the COVID-19 pandemic in Ethiopia. The study sample consisted of (628) employees. The results of the study indicated the preventive practices and cognitive beliefs, and the presence of statistically significant differences according to the variables of self-efficacy, income level, type and nature of work.

Barakat and Kasemy conducted a study on preventive health behaviors towards the Corona virus pandemic based on the Egyptian cognitive health beliefs model. The study sample consisted of (380) respondents. The results of the study indicated that there were differences between the study variables according to age, education level, health care level, perceived sensitivity, expected obstacles, and self-efficacy, and between the regression coefficient and the predictability of preventive health behaviors through the cognitive aspect.

Shahnazi aimed to assess preventive health behaviors based on (healthy) cognitive structures and beliefs. The study sample consisted of (750) participants and the results of the study showed gender differences in the level of preventive health behaviors and in favor of females compared to males. It was also in favor of urban residents compared to residents of rural areas, and differences were found in self-efficacy, and expected perceptions.

Li Yong Wang, Zhang, and Lin examined three cognitive assessments (knowledge, perceived severity of COVID-19) and their associations with emotional and behavioral outcomes among Chinese. The participants were citizens (4607) whose ages (17-90) years old with a mean of 23.71. They were selected from (31) provinces in China who participated in an online survey.

The results showed that emotional and behavioral reactions were little affected by the COVID-19 outbreak. Furthermore, the public had limited participation in COVID-19 related events but actively engaged in precautionary behaviour. In addition, the results of the hierarchical regression analysis showed that the three assessments were variably associated with outcome variables. Theoretically, the findings highlight the usefulness of cognitive assessment, as an essential stress coping process, in explaining public emotion and behavior in the face of public health concerns in action.

Ko investigated the cognitive, emotional, and behavioral structures of beliefs about the COVID-19 pandemic in Taiwan, aiming to compare the cognitive, emotional, and behavioral structures of beliefs about the pandemic. The study sample consisted of (1421) of both sexes, and behavior (adopting health preventive behaviors) was compared between sexual minorities. The results showed that the participants in the study from sexual minorities were less concerned about the pandemic, more confident about dealing with the pandemic, and more committed to healthy behaviors.

Kim and Kim studied the effect of (healthy) cognitive beliefs on protective health behaviors against the COVID-19 pandemic. The results of the regression analysis showed that gender (female), age, number of elderly people in the family, level of perceived distress, perceived benefit, self-efficacy, poor family health, exposure to media and knowledge, personal health status, and the positive impact of social support on preventive measures, predictive of health behaviors, gender explained the highest variance in predictive power, followed by level of knowledge, health status, perceived distress, and social support, which were respectively.

In France, Constant, et al conducted a study on the socio-cognitive factors associated with lifestyle changes in response to the Covid-19 epidemic. The study sample consisted of (4005) through an online survey, and the inquiries of the participants

focused on cognitive expectations with demographic and social variables. The results indicated that there were differences according to a number of variables, including smoking, gender, different levels of physical activity, dietary habits and some protective behaviors. The study conducted by Hall, Fong and Epp on the predictive ability of cognitive and personal factors in predicting health behavior and examining their direct and indirect impact, the study sample consisted of (208) participants. The results showed that conscientiousness and neuroticism are two important factors in predicting healthy behavior in an individual. The study conducted by Al-Rehana (2018) also aimed to identify the effectiveness of a collective cognitive-behavioral counseling program for developing healthy behavior and perceived self-sufficiency among students with chronic diseases in the Taybeh and Al Wasatia district in Irbid governorate. The study sample consisted of (30) students. The results of the study indicated an average health behavior, and a low level of perceived self-sufficiency among students with chronic diseases in Irbid Governorate, and the results showed the continuity of the program's effectiveness.

It is clear from the presentation of previous studies that in most of them they agreed with the current study in terms of the general objective and the (relational) method used, as well as the method in which it was applied, and the place of its conduct. While it differs from some studies in that it dealt with variables of importance during the spread of the pandemic and the prevalence of some negative cognitive beliefs about the pandemic in general, and the variables that focused on: The prevailing cognitive beliefs during the pandemic (Covid-19) and health behavior. The presentation of previous studies has been useful in reviewing the theoretical and methodological frameworks, in organizing and designing the study, defining its problem and objectives, formulating its hypotheses, linking and interpreting the findings. The current study is characterized by being one of the first studies that dealt with cognitive beliefs during the pandemic (Covid-19) and their relationship to the health behavior of a number of target groups in society; As well as the period of time during which the study was conducted (during the pandemic), the prevalence of some negative beliefs about it and its reflection on the health behavior of individuals.

Study hypotheses

According to the results of previous studies, its hypotheses can be formulated as follows:

- The degree of prevalence of cognitive beliefs varies among a sample of Saudi society members towards the Covid-19 pandemic.
- The degree of prevalence of healthy behavior patterns among a sample of Saudi society members towards the Covid-19 pandemic varies.
- There is a relationship between the prevailing cognitive beliefs about the Covid-19 pandemic and the health behavior of a sample of Saudi society members.
- There are differences in the prevailing cognitive beliefs towards the pandemic (Covid 19) among a sample of Saudi society members according to a number of demographic variables (age, gender, place of residence, health status, educational level, specialization, economic status).
- There are differences in the health behavior of a sample of Saudi society members according to a number of demographic variables (age, gender, place of residence, health status, educational level, specialization, economic status).
- The health behavior of the (Covid 19) pandemic can be predicted through the prevalent cognitive beliefs of the study members.

Study methodology

To achieve the objectives of the study, the descriptive approach was used in its two parts (relational-comparative) to reveal the relationship between the prevailing cognitive beliefs during the COVID-19 pandemic and the health behavior of the target group.

Study population and sample:

The study community consisted of various segments of Saudi society, from civil and governmental sectors (university students, teachers, and employees of different sectors) in order to achieve the objectives of the study. The number of the study sample was (1000) responding to the tools that were applied, which are:

(The prevalent cognitive beliefs scale during the Covid-19 pandemic, and the health behavior scale), were selected by cluster random method to include the target study group, and the following is the distribution of study individuals according to the demographic study variables, according to (Figure 1).

Study tools

To achieve the objectives of the study, the following tools were used: 1. Demographic information questionnaire, which included the variables (gender, age, place of residence, health status, educational level, specialization, economic income level) 2. A measure of cognitive beliefs prevalent during the Covid pandemic (19). 3. The Health Behavior Scale, and the following is an explanation of these tools:

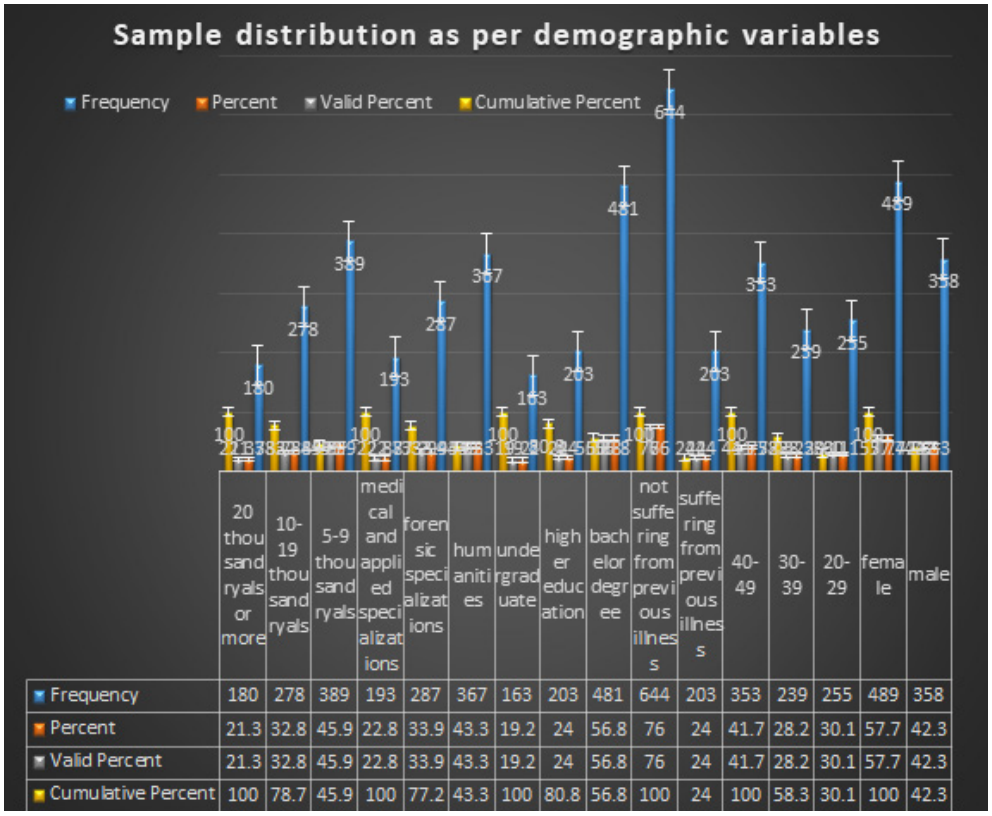
- The Prevalent Cognitive Beliefs Scale during the COVID-19 Pandemic

  In the current study, the prevalent cognitive beliefs scale during the COVID-19 pandemic, prepared by Hammad et al. component (31) items, was used in four dimensions:

- Cognitive bias for optimism, and it consists of (1-14) paragraphs. 2. Cognitive bias for pessimism. It consists of (15-19) paragraphs. 3. Magical Cognitive Beliefs It consists of (20-24) paragraphs. 4. Cognitive beliefs about the conspiracy and it consists of (25-31) paragraphs. The method of correcting the tool is represented by a five-step gradient, where the score is given (1 for the option Strongly Agree, (2) Agree, (3) Neutral (4) Disagree, (5) Strongly Disagree. Invert the values if the statements are negative.

Validity and reliability of the study tools:

- Logical Validity: The apparent validity of the scale was



	20 thousandryals or more	10-19 thousandryals	5-9 thousandryals	medical and applied specializations	forensic specializations	humanities	undergraduate	higher education	bachelor degree	not suffering from previous illness	suffering from previous illness	40-49	30-39	20-29	female	male
Frequency	180	278	389	193	287	367	163	203	481	644	203	353	239	255	489	358
Percent	21.3	32.8	45.9	22.8	33.9	43.3	19.2	24	56.8	76	24	41.7	28.2	30.1	57.7	42.3
Valid Percent	21.3	32.8	45.9	22.8	33.9	43.3	19.2	24	56.8	76	24	41.7	28.2	30.1	57.7	42.3
Cumulative Percent	100	78.7	45.9	100	77.2	43.3	100	80.8	56.8	100	24	100	58.3	30.1	100	42.3

Figure 1: The distribution of study members according to the demographic variables that were addressed, namely, gender, age, the respondent's suffering from previous diseases, educational level, specialization, economic level and the percentage of each variable.

extracted. The scale was returned to its original form and its paragraphs were translated from Arabic into a foreign language by presenting it in its initial form to a group of foreign language specialists (Languages and Translation), and they were asked to re-translate it into English to verify the validity of the scale. Suitable translation for the target group.

- After formulating the phrases in their first form, it was presented to a number of arbitrators specialized in psychology, counseling, psychometrics, and education, from university professors who hold a doctorate degree, their number was (n=6). The cognitive beliefs scale in its initial form consisted of (31) items. The arbitrators were asked to express their opinion on these paragraphs in terms of their suitability to the concept of the scale, the nature of the examinees and the aims of the study, and to make any amendment they deem to be on some of the paragraphs to conform to the objectives of the study, and to add or reject some paragraphs. An agreement standard (80%) of the arbitrators was adopted to indicate the validity of the paragraph and its suitability to remain within the scale, and the arbitrators agreed not to clarify, amend or change its wording.
- Validity Construct to measure the internal consistency of the scale, and to determine the extent to which the paragraphs are related to each other. The scale was applied in its final form on an exploratory sample equivalent to the original study sample consisting of (52) respondents. Coefficients were extracted. Correlation of the scale items with the degree of dimension and the total score of the instrument as a whole are shown in [Table 1]:

It is clear from Table 1 that the correlation coefficients of the paragraphs with the dimension and the total degren of the cognitive beliefs scale prevalent during the pandemic ranged between (t=.228*-.583**) for the paragraph's correlation with the first dimension: cognitive bias for optimism, and (t=.201*-.551**) for the tool as a whole, and (R=.404**-.594**) for the paragraph's association with the second dimension, cognitive bias of pessimism, and (R=.224*-.886**) for the tool as a whole, and (t=.508**-.807**) for the association of the litter with the third dimension (t=.614**-.687**).

This indicates that the scale has an appropriate validity for the purposes of the current study. The correlation coefficient (person) was calculated for the dimensions of the scale in the total degree, as in [Table 2].

It is clear from Table 2 that there is a relationship and internal consistency between some dimensions while it does not exist in other dimensions, and this is explained by the nature of the dimensions and the paragraphs they deal with, as it deals with some positive cognitive beliefs and some negative cognitive beliefs.

Scale reliability

The reliability of the scale was extracted by calculating the internal consistency stability coefficient (Cronbach's alpha). The total score recorded (0.72), and the values of the half-segment stability coefficient were (=0.83; 85; 96; 96) for the dimensions respectively and (0.85) for the total score of the scale. Thus the scale is suitable for the purposes of the current study, where

Table 1: the correlation coefficients of the paragraphs with the dimension and the total degree of the cognitive beliefs scale prevalent during the pandemic ranged between (t = .228* - .583). ** Statistically significant at (0.01)، (0.05)**

Paragraph	Correlation coefficient with the dimensions	Correlation coefficient with the tool	Paragraph	Correlation coefficient with the dimensions	Correlation coefficient with the tool	Paragraph	Correlation coefficient with the dimensions	Correlation coefficient with the tool	Paragraph	Correlation coefficient with the dimensions	Correlation coefficient with the tool
	First dimension			Second dimension			Third dimension			Fourth dimension	
1	.293*	.215*	15	.404**	0.266	20	.719**	.579**	26	.782**	.490**
2	.391**	.410**	16	.682**	.280**	21	.635**	.542**	27	.508**	.316*
3	.451**	.260*	17	.779**	.432**	22	.814**	.643**	28	.614**	.474**
4	.248*	.201*	18	.572**	-.400-	23	.852**	.631**	29	.657**	.615**
5	.416**	.256*	19	.694**	.368**	24	.886**	.667**	30	.763**	.687**
6	.583**	.482**				25	.224*	.455**	31	.807**	.565**
7	.552**	.425**									
8	.431**	.307*									
9	.507**	.431**									
10	.294*	0.247									
11	.611**	.551**									
12	.245*	.259*									
13	.264*	.298*									
14	.277*	.329*									

Table 2: The correlation coefficients of the dimensions of the cognitive beliefs scale prevalent during the pandemic with the total score of the tool (n = 52).

Dimensions	Cognitive optimism	Cognitive pessimism	Cognitive magical beliefs	Cognitive knowledge about conspiracy	Total
Cognitive optimism	1	0.197	.521**	.310*	.785**
Cognitive pessimism	0.197	1	0.214	0.15	.469**
Cognitive magical beliefs	.521**	0.214	1	.512**	.783**
Cognitive knowledge about conspiracy	.310*	0.15	.512**	1	.732**

the value of the stability coefficient was higher than (70%). It indicates the appropriateness of the psychometric properties of the tool.

Health behaviour scale

The health behavior scale developed by Al-Rayhaneh was used in the current study, and it consists of four dimensions: 1. Body care and includes (10) items, which are healthy behaviors related to proper hygiene and physical activity. 2. Taking care of public health, and it includes (9) paragraphs, which are healthy behaviors related to the importance of integrated healthy food 3. Dealing with medicines and drugs, and it includes (8) paragraphs, which are healthy behaviors related to how to use medicines. 4. The psychological and social dimension, which includes (16) paragraphs, which are healthy and sound behaviors related to aspects of social life, and how to deal with others. For the purposes of scale correction only, the responses were determined using the Quadruple Likert method, which are: (always (4) degrees, often (3) degrees, sometimes (2) a degree and rarely (one) degree in the case of positive statements and it is reversed in negative statements, and the degree (1-2) for the paragraph indicates a low level, a medium level of (2.1-3.00) and high level (3.1-4).

Validity and reliability of the health behaviour scale

The tool compiler verified the apparent validity of the scale by adopting the (Loach) method, and also verified the internal consistency and overall stability, where its value amounted to (0.90). In order to verify the psychometric efficiency of the health behavior scale in the current study, the following was done.

Logical validity

The apparent validity of the scale was extracted, as it was presented to a number of arbitrators specialized in psychology, counseling, psychometrics, and education from university professors who hold a doctorate degree, their number was (n=6). The cognitive beliefs scale in its initial form consisted of (43) items, then the arbitrators were asked to express their opinion on these items in terms of their suitability to the concept of the scale, the nature of the subjects and the aims of the study, and to make any modification to some items to conform to the objectives of the study, adding or rejecting some paragraphs, as some of them were merged and others were deleted, so that the scale consists in its final form of (41) paragraphs. An agreement criterion (80%) of the arbitrators was adopted to indicate the validity of the paragraph and its suitability to remain within the scale, and the arbitrators' agreement on the lack of clarity, modification or change of its wording.

Validity Construct to measure the internal consistency of the scale, and to determine the extent to which the paragraphs are related to each other, the scale was applied in its final form on an exploratory sample equivalent to the original study sample consisting of (52) respondents, and coefficients were extracted Correlation of the scale items with the degree of dimension and the total score of the instrument as a whole, [Table 3].

It is clear from Table (3) that the correlation coefficients of the paragraphs with the dimension and the total degree of the health behavior scale ranged between (t=.092-.917) for the paragraph's correlation with the first dimension: body care, and (t=.383 *-.746 *). *) for the tool as a whole, and (t=.427**-.696**) for the paragraph's connection to the second dimension of public health care, and (t=.383*-.746**) for the tool as a whole, and (t=.427*) *-.696**) because the paragraph is related to the third dimension, dealing with medicines and drugs, and (t=.403**-.642**) for the tool as a whole, and (t=.375**-.793**) for the paragraph's connection to the fourth dimension, the psychological and social dimension and (t=.339*-.739**)) for the instrument as a whole, and (t=.393*-.720**), which indicates that the scale has an appropriate validity for the purposes of the current study. The correlation coefficient (person) was also calculated for the dimensions of the scale in the total degree, as in [Table 4].

It is evident from Table (4) that there is a positive relationship between all dimensions of the health behavior scale and their relationship to the total score of the tool, which indicates the suitability of the tool for the current study and the correlation of its dimensions with the total score.

Scale reliability

The reliability of the scale was extracted by internal consistency (Cronbach's alpha).

The internal consistency was calculated between the scale items, and the validity coefficient (Cronbach's alpha) was (=a0.75; 0.74; 0.74; 0.90) for the dimensions respectively and (0.74) for the total score For the scale, and thus the scale is suitable for the purposes of the current study, where the value of the stability coefficient was higher than (70%), which indicates the appropriateness of the psychometric properties of the tool.

Study Procedures

Previous studies related to the subject of the empty study

Table 3: The correlation coefficients of the items with the dimension and the total score. ** Statistically significant at (0.01)، (0.05)

Paragraph	Correlation coefficient with the dimensions	Correlation coefficient with the tool	Paragraph	Correlation coefficient with the dimensions	Correlation coefficient with the tool	Paragraph	Correlation coefficient with the dimensions	Correlation coefficient with the tool	Paragraph	Correlation coefficient with the dimensions	Correlation coefficient with the tool
	First dimension			Second dimension			Third dimension			Fourth dimension	
1	.698**	.512**	1	.602**	.655**	1	.403**	.558**	1	.339*	.349*
2	.533**	.413**	2	.620**	.445**	2	.632**	.375**	2	.697**	.588**
3	.741**	.696**	3	.613**	.443**	3	.540**	.373**	3	.720**	.655**
4	.746**	.564**	4	.457**	.469**	4	.642**	.405**	4	.733**	.593**
5	.734**	.635**	5	0.5	.405**	5	.444**	.793**	5	.793**	.720**
6	.639**	.437**	6	.670**	.446**	6	.494**	.355**	6	.630**	.575**
7	.663**	.534**	7	.600**	.487**	7	.500**	.395**	7	.763**	.602**
8	.383**	.427**	8	.604**	.433**	8	.515**	.673**	8	.646**	.530**
9	.474**	.436**	9	.434**	.372**				9	.696**	.633**
10	.682**	.490**							10	.718**	.595**
									11	.660**	.536**
									12	.739**	.658**
									13	.677**	.606**

Table 4: The correlation coefficients of the dimensions of the cognitive beliefs scale prevalent during the pandemic with the total score of the tool (n = 52).

Scale dimensions	Taking care of the body	Taking care of health	Medicine and drugs	Socio-psychological dimension	Total
Taking care of the body	1	.661**	.468**	.501**	.809**
Taking care of health	.661**	1	.538**	.570**	.837**
Medicine and drugs	.468**	.538**	1	.511**	.704**
Socio-psychological dimension	.501**	.570**	.511**	1	.857**

were reviewed. The appropriate tools were identified, the psychometric efficiency of the study tools was checked. The target study members were identified, an electronic model was built (Google drive), and the tools were applied to the target group. The responses of the participants in the study were sorted. The incomplete responses were excluded, the answers were sorted. The data entered into the Statistical Package for Social Sciences (SPSS), and the statistical processing was performed.

Statistical Methods

To verify the efficiency of the psychometric tools, the Pearson correlation coefficient and Cronbach's alpha coefficient were used, and to test the hypotheses of the study, the arithmetic means and standard deviations of the responses of the study members were calculated, in addition to using the associated multiple analysis of variance (MANCOVA) to answer the differences in cognitive beliefs and health behavior according to the number of From demographic variables, the use of t-test and stepwise multiple regression test.

Results

The following is a detailed presentation of the results of the study, their discussion and interpretation according to the hypotheses of the study.

The results related to the first hypothesis:

To verify the first hypothesis of the study, which states that "the prevalence of cognitive beliefs varies among a sample of Saudi society members towards the Covid pandemic (19)." Arithmetic means and standard deviations were extracted on the sub-dimensions and the overall degree of the scale (the prevalent cognitive beliefs during the pandemic (Covid-19) as in [Table 5].

Table 5 shows that there are apparent differences in the arithmetic means and standard deviations, where the highest arithmetic means were the cognitive beliefs related to the plot with an arithmetic mean of (24.15) and a standard deviation of (7.91), followed by the second rank after the cognitive bias for pessimism, with an arithmetic mean of (22.64) and a standard deviation (13.25). Moreover, in the third place came the magical cognitive beliefs with an arithmetic mean of (21.69) and a standard deviation (13.54), and the total arithmetic mean of cognitive beliefs was (84.82) with a standard deviation of (31.14).

The results of the study agree with the results of the study conducted by on the role of some preventive practices in predicting cognitive beliefs towards the COVID-19 pandemic in Ethiopia, whose results showed that among the preventive practices and cognitive beliefs, and the presence of statistically significant differences according to the variables of self-efficacy, income level, type and nature of work.

The previous result is justified by the high prevailing cognitive beliefs during the (Covid-19) pandemic among the study members for several factors, including the role of the media around the pandemic in general, and social networking sites in particular, the weakness of knowledge and accurate information about the pandemic, the World Health Organization's declaration that the virus is a pandemic, the restrictions which were conducted such as social distancing, individuals' commitment to wearing a muzzle, home quarantine, and other global measures such as travel and movement from one city to another, which contributed as complete and combined factors to the rise of negative cognitive beliefs towards the pandemic and to varying degrees among members of society based on a number of variables that have been studied (age, gender, educational level, specialization). This is in agreement with the results of the study conducted by Barakat and Kasemy whose results showed that there are differences between the study variables according to age, education level, health care level, perceived sensitivity, expected obstacles, self-efficacy, and between regression coefficient and predictability of preventive health behaviors through the cognitive aspect.

The results related to the second hypothesis:

To verify the second hypothesis of the study, which states that "the degree of prevalence of health behavior patterns among a sample of Saudi society members towards the Covid-19 pandemic varies", the arithmetic means and standard deviations were extracted on the sub-dimensions and the total score of the (health behavior) scale, as in the [Table 6].

Table 6 shows that there are apparent differences in the arithmetic means and standard deviations, where the highest arithmetic means came in the psychological and social dimension with an arithmetic mean of (48.34) and a standard deviation of (6.86), followed by the dimension of body care with an arithmetic mean of (25.95) and a standard deviation of (5.28). and in the third place came the dimension of drugs and medicines with an arithmetic mean of (23.91) and a standard deviation (6.44), and in the last rank came the dimension of public health care with an average of (21.51) and a standard deviation (8.68). Moreover, the total arithmetic mean of health behavior reached (120.52) with a standard deviation of (14.34) The current result demonstrates the health protocols announced by the World Health Organization and has become an integral part of daily behavior, as well as the role of positive media in its dissemination of prevention methods

Table 5: Arithmetic averages and standard deviations on the sub-dimensions and the total score of the (Covid-19) prevalent cognitive beliefs scale (n = 847).

Dimension	Arithmetic mean	Standard deviation
Cognitive optimism	16.3294	13.22157
Cognitive pessimism	22.6446	13.25536
Cognitive magical beliefs	21.6989	13.54601
Cognitive beliefs on conspiracy	24.1523	7.9111
Total	84.8253	31.14566

Table 6: Arithmetic averages and standard deviations on the sub-dimensions and the total score for the (Health Behavior) scale (n = 847).

Sub-dimensions	Arithmetic mean	Standard deviation
Taking care of the body	25.9599	5.28777
Taking care of health	21.51	8.68966
Medicine and drugs	23.9185	6.44612
Socio-psychological dimension	48.3412	6.86293
Total	120.5218	14.34732

locally and globally, practicing healthy behavior and preventive practices used to deal with the pandemic and prevent infection, and infection with this type of virus, and obligating the official authorities for individuals to apply some of these behaviors to them, such as washing hands and spreading sterilizers in public places, adhering to some health applications, wearing a muzzle, and other procedural behaviors that had an impact on raising the level of health behavior of individuals, in addition to the awareness and fears that spread during the pandemic, it led to an increase in the percentage and level of individuals' commitment to healthy behavior to a high degree.The current result agrees with the results of the study conducted by Shahnazi, et al to assess preventive health behaviors based on (health) cognitive structures and beliefs, the results of which showed a high level of health behavior among individuals, and the presence of gender differences in the level of preventive health behaviors in favor of females. Compared to males, in favor of urban residents compared to rural residents, and differences were found in self-efficacy, and expected perceptions.

The results related to the third hypothesis:

To verify the third hypothesis of the study, which states that "there is no relationship between the prevailing cognitive beliefs towards the Covid-19 pandemic) and the health behavior of a sample of Saudi society members. The correlation coefficient (Pearson) was calculated to reveal the relationship between the variables (cognitive beliefs (total score and dimensions, health behavior total score and dimensions), as follows:

It is evident from Table 7 that there is a negative relationship between the first dimension, the cognitive bias for optimism and all dimensions of health behavior (dimension of body care, dimension of general health care, dimension of drugs and medications, and the overall degree of healthy behavior), and there is a relationship between the second dimension, cognitive bias for pessimism and the sub-dimensions of the scale of health behavior (the first dimension) and the absence of a relationship for the same dimension with the rest of the dimensions related to health behavior and its overall degree. It is also found that there is a negative relationship between the third dimension, magical cognitive beliefs, the first dimension of body care, the second dimension of public health care, and the overall degree of health behavior, while it was found that there was no relationship between the same dimension and the third dimension, drugs and medicines. With regard to the fourth dimension of cognitive beliefs about the conspiracy, it was found that there is a statistically significant relationship between the first dimension of body care and the second dimension of public health care and the overall degree of health behavior, and there is no relationship between the same dimension and the third and fourth dimensions of health behavior dimensions.

With regard to the total degree of cognitive beliefs, it was found that there is a negative relationship between the cognitive beliefs, the total degree and the total degree of the health behavior scale. This result of the existence of a negative relationship between negative cognitive beliefs and healthy behavior can be explained by the fact that individuals who have weak cognitive perception and basic information about this epidemic were less able to cognitively deal with this pandemic and more believe in the conspiracy theories circulated around it, which reflected on their behavior and thoughts and their daily behaviors, and make them act in a more protective manner than they were before, such as taking medications that increase the individual's immunity or belief in magical beliefs related to taking some medicinal herbs and protecting the immune system, periodic work on self-censorship and adherence to healthy behavior such as social distancing, excessive hand washing, use of sterilizers and household and physical cleaners, adherence to the muzzle and other things. This confirms that the higher the percentage of negative cognitive beliefs, the negatively affected the health behavior, and the higher the positive cognitive beliefs, the

Table 7: Pearson correlation coefficient of the relationship between cognitive beliefs, total score and sub-dimensions, and health behavior, total score and sub-dimensions, among members of Saudi society (n = 847). Statistically significant at (0.01)، (0.05)**

Sub-dimensions	Taking care of the body	Taking care of health	Medicine and drugs	Socio-psychological dimension	Total
Cognitive optimism	-.152-**	-.125-**	-.086-*	-.126-**	-.160-**
Cognitive pessimism	-.078-*	-.061-	-.046-	0.004	-.052-
Cognitive magical beliefs	-.090-**	-.099-**	-.028-	-.094-**	-.108-**
Cognitive beliefs on conspiracy	-.083-*	-.088-*	-.037-	-.054-	-.080-*
Total	-.156-**	-.142-**	-.078-*	-.111-**	-.158-**

Table 8: the differences in the prevailing cognitive beliefs during the COVID-19 pandemic among community members according to the gender variable. (n = 847).

Dimension	Gender	N	Mean	Std. Deviation	Df	Sig. (2-tailed)
Cognitive optimism	Male	358	44.2598	6.80436	845	0.378
	Female	489	44.6748	7.06488		
Cognitive pessimism	Male	358	16.7179	3.39818	845	0.007
	Female	489	16.1145	3.34173		
Cognitive magical beliefs	Male	358	17.6061	3.63744	845	0.132
	Female	489	17.9898	3.59615		
Cognitive beliefs on conspiracy	Male	358	20.8743	5.15348	845	0.648
	Female	489	20.681	5.39699		
Total	Male	358	99.4581	13.06404	845	0.997
	Female	489	99.4601	13.56825		

positive health behavior and its practice in a balanced way, far from confusion and harm to oneself and others. This is in part consistent with the results of the study conducted by Thoma, V., Weiss-Cohen, Filkuková, and Ayton, , the results of which showed the predictive ability of cognitive beliefs in precautionary behaviors and in reverse, where people with a low level of positive cognitive beliefs practiced precautionary behaviors more than those with positive beliefs about the pandemic.

The results related to the fourth hypothesis

To verify the fourth hypothesis of the study, which stated that "there are differences in the prevailing cognitive beliefs about the pandemic (Covid 19) among members of Saudi society according to a number of demographic variables (age, gender, health status, educational level, specialization, economic status). To identify the differences in the cognitive beliefs prevalent among members of the community, a t-test was conducted for two independent samples (males and females), and a multivariate analysis of variance was conducted, as follows:

It is clear from [Table 8] that there are no differences in the prevailing cognitive beliefs during the Covid-19 pandemic among community members according to the gender variable on all dimensions of the scale and the total degree of cognitive beliefs except for the second dimension, where the differences came in favor of males compared to females.

This result is consistent with the results of the study carried out by Bandar and Hall Hamad, Hamed, Al-Qerem, Bandar, and Hall on cognitive bias, optimism, pessimism, magical beliefs, conspiracy theories and beliefs related to the pandemic in the Jordanian population, the results of which showed that females are higher in misconceptions from male participants who attended a lecture on the Corona virus. This may indicate the cognitive ability and psychological hardness that is characterized by its fluctuation in females compared to males, as well as the speed of believing and listening to rumors that spread to them quickly, and excessive fear or what is called excessive protection of themselves, as well as some of their fears as mothers and women around them, where women were described with their characteristics, personal and psychological, as being more self-protective, and out of fear for the men around them.

It is clear from [Table 9] that there are differences in the age variable on all dimensions of the prevailing cognitive beliefs during the pandemic and the total degree of the tool, according to those aged (40-49) years and over.This result is explained by the fact that the elderly are more fearful of their physical health, and some fears and rumors have emerged that indicate a higher rate of infection in the elderly more than others, and perhaps the reason is that they are more physically fragile, and more affected by other physical diseases such as chronic diseases (pressure, diabetes, and other accompanying diseases) and this result can also be explained by the fact that their fears came because they are more cognitively mature and aware of reality than others, wiser and aware of the dangers of this pandemic and the expansion of its spread in the world and the absence of statistically significant differences in all dimensions of all dimensions of the prevailing cognitive beliefs during the pandemic and the total degree of the tool according to the health status variable, with the exception of the second dimension, which is the cognitive beliefs of pessimism, along with the intellectualism that accompanied the pandemic, especially some negative cognitive beliefs that indicated that it was a conspiracy against humans aimed at getting rid of them, and prior belief in global conspiracy theories and what became rumored about the pandemic of ideas that led to fears and an inability to cognitive balance among individuals. There were no statistically significant differences in all dimensions of all dimensions of the prevailing cognitive beliefs during the pandemic and the total degree of the tool according to the educational level variable, with the exception of

Table 9: The multiple variance analysis (non-interaction) the differences in the cognitive beliefs, the total degree and the sub-dimensions of the members of the Saudi society according to a number of demographic variables (age, gender, health status, educational level, specialization, economic status (n = 847).

Independent variable	Dependent Variable	Type III Sum of Squares	Df	Mean Square
Age	Cognitive optimism	387.656	2	193.828
	Cognitive pessimism	230.484	2	115.242
	Cognitive magical beliefs	221.132	2	110.566
	Cognitive beliefs on conspiracy	229.977	2	114.989
	Total	1183.825	2	591.913
Health	Cognitive optimism	116.474	1	116.474
	Cognitive pessimism	64.554	1	64.554
	Cognitive magical beliefs	5.451	1	5.451
	Cognitive beliefs on conspiracy	23.865	1	23.865
	Total	456.989	1	456.989
Academic level	Cognitive optimism	326.073	3	108.691
	Cognitive pessimism	113.147	3	37.716
	Cognitive magical beliefs	161.695	3	53.898
	Cognitive beliefs on conspiracy	164.437	3	54.812
	Total	2143.136	3	714.379
Academic specialization	Cognitive optimism	554.943	3	184.981
	Cognitive pessimism	7.993	3	2.664
	Cognitive magical beliefs	253.919	3	84.64
	Cognitive beliefs on conspiracy	15.638	3	5.213
	Total	1515.792	3	505.264

	Cognitive optimism	85.582	3	28.527
	Cognitive pessimism	40.918	3	13.639
Income	Cognitive magical beliefs	20.238	3	6.746
	Cognitive beliefs on conspiracy	100.501	3	33.5
	Total	534.669	3	178.223
	Cognitive optimism	38902.478	834	46.646
	Cognitive pessimism	8942.565	834	10.722
Error	Cognitive magical beliefs	10097.984	834	12.108
	Cognitive beliefs on conspiracy	23106.908	834	27.706
	Total	143195.234	834	171.697
	Cognitive pessimism	1718149	847	
	Cognitive pessimism	236611	847	
Total	Cognitive magical beliefs	280262	847	
	Cognitive beliefs on conspiracy	388836	847	
	Total	8529416	847	
	Cognitive pessimism	40921.75	846	
	Cognitive pessimism	9647.334	846	
Corrected Total	Cognitive magical beliefs	11064.834	846	
	Cognitive beliefs on conspiracy	23703.301	846	
	Total	150768.345	846	

the second and third dimensions, which is the cognitive beliefs of pessimism, magical cognitive beliefs, and the differences came in favor of those with a low educational level (less than a bachelor's) compared to other categories. This logical result proves that those with higher studies are more scientifically aware of faith and belief in some magical (medical) concepts that can treat infection with the virus, and more awareness and cognitive awareness in this pandemic, and perhaps it indicates their ability to refer to references and scientific sources and see these knowledge and concepts around it, their ability to predict the future and spread of the pandemic, their scientific follow-up to scientists and With regard to the variable of scientific specialization, the differences in cognitive beliefs came on the first dimension, the cognitive beliefs of optimism, the third dimension, magical cognitive beliefs, and the total degree of cognitive beliefs in favor of those with medical specialties in the first dimension. The rationale of this result proves that those with medical specialties are more aware, aware, knowledgeable, and have faith in the ability of scientists and their previous experience in dealing with a number of viruses and their spread in past eras, which made them more skilled and aware of them. This indicates that the economic income has nothing to do with the basic symptoms that accompanied the spread of the epidemic, the ways in which it was transmitted to the individual, how he was infected with it, and the signs and evidence that prove that the individual is infected with this type of virus, and this indicates human nature and that some financial variables are not directly related to this. The epidemic, so the concern about it was prevalent among everyone, without exception. In order to identify the differences in the cognitive beliefs prevalent among members of the community, a t-test was conducted for two independent samples (males and females), and a multivariate analysis of variance was conducted, as follows:

It is clear from [Table 10] that there are no differences in all dimensions of the health behavior scale and the total score of the tool among community members according to the gender variable, except for the third dimension, drugs and medicines, where the differences came in favor of females compared to males. The current result explains that the pandemic was general for male and female individuals and in all societies, as well as the lack of data or studies proving that it affects one group without another, so the health protocols that were followed came to everyone regardless of gender or age group of the individual, so they came Without differences, the commitment to health behaviors was general and binding from the relevant authorities for both sexes, and this is consistent with the results of the study whose results showed that there were no differences according to the gender variable [11].

It is evident from [Table 11] that there are no statistically significant differences according to the variable of age, educational level on all dimensions and the total degree of health behavior, while there are statistically significant differences according to the variable of health status on the second and third dimensions of public health care, and taking medications and drugs. The differences came in favor of those suffering from diseases such as (diabetes, stress and some other chronic diseases), and there were no differences on the rest of the dimensions and the overall degree of the tool.

The current result is explained by the fact that the pandemic broke into homes and individuals without exception and without regard to gender, age or educational level. The current result is in agreement with a number of previous studies, including: Tadesse, Alemu, Amogne, Endazenaw, and Mamo, and the study that discussed preventive health behaviors towards the Corona virus pandemic based on the belief model [12]. Another study was conducted by Shahnazi, et al and it examined the evaluation of preventive health behaviors based on (healthy) cognitive structures and beliefs. This study also agrees with the study that examined the cognitive, emotional and behavioral structures of

Table 10: The differences in the prevailing cognitive beliefs during the COVID-19 pandemic among community members according to the gender variable (n = 847).

Dimensions	Gender	N	Mean	Std. Deviation	df	Sig. (2-tailed)
Taking care of the body	Male	358	27.8296	4.54501	845	0.582
	Female	489	28.0041	4.566		
Taking care of health	Male	358	25.9358	3.90271	845	0.21
	Female	489	25.5828	4.14464		
Medicine and drugs	Male	358	21.4609	3.31322	845	0.043
	Female	489	21.9346	3.39657		
Socio-psychological dimension	Male	358	48.4804	6.71621	845	0.956
	Female	489	48.454	6.91625		
Total	Male	358	120.3799	14.02662	845	0.806
	Female	489	120.6258	14.59105		

Table 11: Shows the multiple variance analysis (non-interaction) differences in the health behavior of the total degree and sub-dimensions of the members of the Saudi society according to a number of demographic variables (age, gender, health status, educational level, specialization, economic status). (n = 847).

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Age	Taking care of the body	31.039	2	15.519	0.759	0.468
	Taking care of health	32.173	2	16.087	1.04	0.354
	Medicine and drugs	18.059	2	9.029	0.797	0.451
	Socio-psychological dimension	165.022	2	82.511	1.789	0.168
	Total	330.647	2	165.324	0.82	0.441
Health	Taking care of the body	18.546	1	18.546	0.907	0.341
	Taking care of health	106.64	1	106.64	6.895	0.009
	Medicine and drugs	43.527	1	43.527	3.841	0.05
	Socio-psychological dimension	42.165	1	42.165	0.914	0.339
	Total	733.37	1	733.37	3.639	0.057
Academic level	Taking care of the body	74.714	3	24.905	1.218	0.302
	Taking care of health	30.557	3	10.186	0.659	0.578
	Medicine and drugs	52.715	3	17.572	1.551	0.2
	Socio-psychological dimension	144.633	3	48.211	1.045	0.372
	Total	540.905	3	180.302	0.895	0.443
Academic specialization	Taking care of the body	156.476	3	52.159	2.552	0.054
	Taking care of health	195.087	3	65.029	4.205	0.006
	Medicine and drugs	16.481	3	5.494	0.485	0.693
	Socio-psychological dimension	150.729	3	50.243	1.089	0.353
	Total	1740.6	3	580.2	2.879	0.035
Income	Taking care of the body	104.291	3	34.764	1.701	0.165
	Taking care of health	286.732	3	95.577	6.18	0
	Medicine and drugs	0.627	3	0.209	0.018	0.997
	Socio-psychological dimension	121.952	3	40.651	0.881	0.45
	Total	775.097	3	258.366	1.282	0.279
Error	Taking care of the body	17048.245	834	20.442		
	Taking care of health	12898.733	834	15.466		
	Medicine and drugs	9451.145	834	11.332		
	Socio-psychological dimension	38475.717	834	46.134		
	Total	168088.609	834	201.545		
Total	Taking care of the body	678303	847			
	Taking care of health	574675	847			
	Medicine and drugs	409703	847			
	Socio-psychological dimension	2028942	847			
	Total	12477256	847			
Corrected Total	Taking care of the body	17554.89	846			
	Taking care of health	13846.163	846			
	Medicine and drugs	9595.23	846			
	Socio-psychological dimension	39446.723	846			
	Total	174145.346	846			

Table 12: Results of the multiple stepwise linear regression analysis, the increase in the squares of the correlation coefficients between the dependent variable and the independent variables that contributed to the interpretation of the variance of the dependent variable (health behavior).

Independent variable	Dependent variable	Total	Correlation coefficient (R)	R Square	value (f)	Significance level (F)
Dominant cognitive beliefs during the pandemic (dimensions and total)	Health behavior	847	.196e	0.039	11.27	0

beliefs about the COVID-19 pandemic in Taiwan, which aimed to compare the cognitive, emotional and behavioral structures of beliefs about the pandemic [13]. As for the educational level variable, the differences came on the health care dimension in favor of those with the highest educational level (higher studies) compared to the other categories, and it was not clear that there were differences on the rest of the other dimensions, and with regard to the scientific specialization variable, the differences came in the second dimension of public health care and the total degree of the health behavior scale. The differences came in favor of specialists in forensic sciences compared to those who specialize in medical and human sciences, and finally with regard to the level of economic income, the differences came only in the third dimension, taking drugs and medicines in favor of those with income ranging from (10-19) thousand riyals per month compared to other groups.

The results related to the sixth hypothesis

To verify the sixth hypothesis of the study, which states that "the health behavior followed can be predicted through the prevalent cognitive beliefs during the (Covid 19) pandemic among the study members," a stepwise multiple regression analysis was used (considering that the healthy behavior) practiced by the study members is a dependent variable. (the test) and the independent variable (the prevalent cognitive beliefs during the pandemic), which are predictive variables for the study sample as a whole, and [Table 12] illustrates this.

It is clear from Table 12 that regression variance analysis (F value), through which the significance of the coefficient of determination (R Square) is tested, that the prediction model is statistically significant, meaning the ability of the independent variables (the prevailing cognitive beliefs during the pandemic (dimensions and total degree) to predict the dependent variable) (Health behavior) in the study sample.

The value of (F) was statistically significant at the level of significance (0.01) and this indicates the significance of the prediction model, and through the value of the coefficient of determination. It was found that the contribution of the independent variable to the dependent variable amounted to (19.6%), which is an appropriate percentage.

It is clear from the previous presentation that the highest models suitable for the interpretation of variance is the model that includes (the cognitive bias of pessimism, cognitive beliefs about the conspiracy, and the total degree of cognitive beliefs), where this model explained 19.6% of the variance that occurred in the dependent variable, and the value of (f) showed morality of the model. The value of (t) for the variables was also statistically significant through standard beta values, that the highest variables contributing to the interpretation of the variance on the dependent variable is the variable of the total degree of cognitive beliefs, followed by the beliefs about the conspiracy and finally the beliefs that drive pessimism. People with a lower level of positive cognitive beliefs practiced precautionary behaviors more often than those with positive beliefs about the pandemic. It also agrees with the results of the study conducted by Hall, Fong and Epp on the predictive ability of cognitive and personal factors in predicting health behavior and examining their direct and indirect impact [14]. The study sample consisted of (208) participants. The results showed that conscientiousness and neuroticism are two important factors in predicting healthy behavior in an individual. The previous result is justified by the possibility of predicting health behavior through positive and negative cognitive structures and beliefs, especially with regard to cognitive beliefs towards the cognitive bias of pessimism and cognitive structures related to conspiracy theories, cognitive beliefs, confusion of procedures, rapid spread and the resulting effects contributed greatly to these beliefs [15].

Recommendations

Based on the results of the present study, the following points are recommended:

- Activating the role of preventive psychological counseling programs and psychological counseling during crises to help individuals deal with crises, address negative cognitive beliefs, and deal with crises with a positive healthy behavior.
- Building counseling programs to develop the skills of positive health behavior and dealing with crises.
- Paying attention to preventive psychological counseling programs in all fields (educational, educational, health, and administrative) for all members of society.
- Spreading sound cognitive awareness from a reliable scientific source about the prevailing cognitive beliefs during the pandemic, such as the Ministry of Health.
- Training individuals in societies and community institutions on healthy behavior, skills and patterns during the crisis (Covid-19) as a model.
- Cooperating with national media institutions to disseminate knowledge and positive information from its source to members of society, and qualify them from a cognitive and psychological aspect.

Conclusion

The results indicated that there were differences in the cognitive beliefs related to the conspiracy with an arithmetic average of 24.15, The most prevalent dimension of health behavior was represented by the psychological and social dimensions with an arithmetic average of 48.34 SO, Activating the role of preventive psychological counseling programs and

psychological counseling during crises to help individuals deal with crises, address negative cognitive beliefs, and deal with crises with positive healthy behavior.

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