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CONTENTS

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目　錄

研究論文

年度索引

本刊訊息

Contents

Research Articles

健康促進與衛生教育學報
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The Mediation Effect of Persuasive Appeals on the Relationship between Individual Cultural Values and COVID-19 Vaccination Intentions in Taiwan

Chuan-Chuan Cheng

Abstract

This study aimed to examine the mediation role of persuasive appeals on the relationship between individual cultural values and COVID-19 vaccination intentions. A cross-sectional online survey was conducted in the beginning of 2021, before COVID-19 vaccines were available in Taiwan. A total of 458 adult citizens participated in this study. Hayes PROCESS software was used to analyze the mediation effect to test hypotheses. Results indicated that persuasive messages indeed mediated the relationship between individual cultural values and intentions to obtain the COVID-19 vaccine. Collectivism indirectly affects vaccination intention through moral appeals. Uncertainty avoidance, masculinity, and long-term orientation indirectly impacted vaccination intention via fear appeals. Power distance indirectly influenced vaccination intention through

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punitive and reward appeals. Implications and limitations of this study were discussed.

Key Words: COVID-19, individual cultural values, health campaigns, persuasive appeals, vaccination intentions

Introduction

Since its discovery in Wuhan, China, in late 2019, COVID-19 virus has spread around the world, infecting more than 176 million, and killing more than 3.8 million people globally as of May 2021 (Taiwan Centers for Disease Control, 2021). Although Taiwan is a country exempted from the outbreak of COVID-19 because of being well-prepared, such as immediate border control and communication with the public to implement evidence-based epidemic prevention policies (Chang et al., 2021), it remains the major public health threat in Taiwan. Many experts believe that COVID-19 may become flu-like and coexist with humans (e.g., Ko1 et al., 2020). Vaccination may be a viable option to combat COVID-19 in the future (Kwok et al., 2021). Given that at least three-quarters of the population need to be immune through vaccination or prior infection to reach herd immunity to stop the spread of COVID-19 (Ko1 et al., 2020; Regalado, 2020), vaccine hesitancy remains a global challenge (Kwok et al., 2021). With no community infections in Taiwan, a prolonged epidemic may lead to fatigue in implementing preventive measures and overly optimistic about COVID-19 susceptibility, and reduce citizens' willingness to be vaccinated. For instance, a survey indicated that 63.5% of citizens perceived that COVID-19 was not severe in Taiwan, and only 40% of citizens were concerned about contracting the COVID-19 virus (Tsai et al., 2021).

With no prior-infection population in Taiwan, at least 75% of citizens need to be vaccinated to reach herd immunity to stop the spread of COVID-19 and be able to reopen border controls. Since vaccinations are not mandatory in Taiwan, citizens' vaccination intention determines whether herd immunity can be achieved to prevent the spread of the COVID-19 virus. Therefore, the vaccination campaign has become the next important epidemic prevention task in Taiwan,

after successfully preventing any potential outbreak of COVID-19 since the end of 2019 to date. Taiwan is one of the few countries that have successfully controlled the spread of the COVID-19 virus domestically; in addition to appropriate policies of COVID-19 prevention, citizens' compliance with measures has an important link with the successful containment of the epidemic (Chang et al., 2021). Scholars argued that interdependent (collectivism) and tight (restraint) societies tended to be more effective in preventing the spread of the COVID-19 virus than those of independent (individualism) and loose (indulgent), so epidemic prevention strategies need to be formulated based on social contexts (Van Bavel et al., 2020). Therefore, it is necessary to investigate the impact of culture on vaccination intentions based on the social context of Taiwan and explore appropriate communication strategies to improve COVID-19 vaccination rates in the future.

However, research findings in different countries had suggested that the important determinants of vaccine hesitancy seemed to be distrust of the vaccine safety (e.g., Banik, et al., 2021; Tsai et al., 2021; Thunström et al., 2021). Other indicators found to be associated with COVID-19 vaccination intentions included demographic, socioeconomic and behavioral factors (e.g., Banik, et al., 2021; Chu & Liu, 2021; Kadoya et al., 2021; Khubchandani et al., 2021; Song et al., 2022; Thunström et al., 2021), as well as beliefs and attitudes about vaccines (e.g., Chen et al., 2021; Chu & Liu, 2021; Sherman et al., 2020; Shmueli, 2021). While these studies have provided some preliminary insights into the demographic, socioeconomic, and behavioral factors associated with COVID-19 vaccination intention, factors such as personal characteristics and cultural values are understudied. As previous research suggested, cultural difference influenced how different countries combat the COVID-19 outbreak (Gokmen et al., 2020; Kwok et al., 2021). Further research also indicated that individuals from different ethnic groups were affected differently by COVID-19 (e.g., Khubchandani et

al., 2021). For instance, a recent survey of 17 countries (Wong et al., 2021) indicated that citizens of some countries (e.g., Australia, China and Norway) were more willing to receive the COVID-19 vaccination than those of others (e.g., Japan, the U.S. and Iran). By regions, a high proportion of likely to receive the COVID-19 vaccine was reported in Southeast Asian countries, while a high proportion reported being unlikely to receive the vaccine in the Americas (Wong et al., 2021). Another global study also indicated that COVID-19 vaccine acceptance tended to be high in the Asian nations (except Japan) where the public had strong institutional trust (Lazarus et al, 2021). While these findings provided various countries and regions with target population they need to achieve to increase vaccine acceptance and coverage, their results failed to explore why citizens of certain countries were more willing to be vaccinated than those of others. Therefore, all countries must develop individually-tailored strategies to increase their citizens' confidence in vaccination (Wong et al., 2021). For instance, previous findings indicated that different persuasive appeals convinced individuals held different cultural values (Hetsroni, 2000). Further studies also found that different persuasive strategies had different impact on individuals' willingness to be vaccinated (Ye et al., 2021). In other words, persuasive messages may mediate between individual cultural values and intentions to receive a COVID-19 vaccine. No study has looked at this mediating role.

Rationale and Hypotheses

Individual Cultural Values

To make health communication as effective as possible, researchers and practitioners should consider the cultural and individual values of the target audience (Gallopel-Morvan et al. 2011; Hastall & Knobloch-Westerwick, 2013;

Dutta & Vanacker, 2000). Hofstede's theory of six cultural dimensions provides a framework to study the effect of individual cultural values on health behaviors. The theory explains the effects of a culture on the values of its members, and how these values relate to behaviors. For instance, a recent study had demonstrated the six dimensions of cultural values in examining the impact of countries' cultural values on the infect cases of COVID-19 (Gokmen, Baskici, & Ercil, 2020). Although the six dimensions of cultural values can be examined at both collective (such as country, organizational and occupational) and individual levels (Hofstede, 2011), this research will focus on the individual level. "By measuring individual cultural orientations and not equating them to the national culture, researchers can avoid the ecological fallacy that occurs when ecological or country-level relationships are interpreted as if they are applied to individuals" (Yoo et al., 2011, p195). The collective level of cultural values may be not useful predictors of individual behaviors because it is unclear which aspects of culture influence an individual's behaviors (Bond, 2002; Hofstede, 1991; Sharma, 2010), especially in a country with a multiethnic population like Taiwan. Therefore, the individual level of cultural values should better explain the influence of culture on citizens' health behaviors in Taiwan. Demonstrating links among Hofstede's individual-level cultural dimensions, persuasive strategies, and vaccination intentions may further elaborate understanding of the role of cultural values and persuasive appeals in vaccination campaigns. The six cultural dimensions include individualism/collectivism, uncertainty avoidance, long-term/short-term orientation, masculinity/femininity, power distance and indulgence/restraint.

Individualism/Collectivism

This dimension provides a conceptual grid for describing how self-concepts vary across cultures (Hofstede, 1983). For instance, individualists may strive for autonomy, dominance, control and power to reinforce and protect the individual

differentiation, while collectivists may strive for intimacy, connectedness, and solidarity with a social entity, and be highly motivated by the need to care for others (Uskul & Hynie, 2007). To date, the health related studies had explored the concept of individualism/collectivism more than the other five cultural dimensions. For instance, recent studies suggested that promoting collectivism may be a way to increase engagement with efforts to reduce the spread of COVID-19, as a sense of collectivism might improve attitudes towards behaviors involving personal sacrifice (e.g., Biddlestone et al., 2020).

The individual level of individualism and collectivism is synonymous with some personality traits, such as idiocentrism and self-construal. For instance, Dutta and Vanacker's (2000) study had demonstrated how idiocentrism affected preference types of persuasive appeals in public health campaigns. Their findings indicated that low idiocentrics (collectivists) had a more positive attitude toward social appeals (reinforcing group membership and affiliation), while high idiocentrics (individualists) toward functional (focusing on problem solving and prevention) and sensory (stressing sensory gratification needs) appeals. Uskul and Hynie's (2007) study had demonstrated the relationship between self-construal and illness-related concerns. Their findings indicated that interdependent self-construal (collectivism) was associated with the social-illness concerns (the consequence of illness affecting others or changes in relationships), while independent self-construal (individualism) was correlated with the personal-illness concerns (the consequence of illness affecting self's behavior, well-being, or self-conceptions). A recent research also indicated that collective responsibility was associated with a higher tendency to receive a COVID-19 vaccine (Kwok et al., 2021). In other words, it is reasonable to assume that collectivists will be highly concern about the welfare (such as health) of their society and family during a pandemic, like COVID-19. Therefore, collectivism will be positively related to COVID-19 vaccination intention.

Uncertainty Avoidance

This dimension has been conceptualized as the extent to which an individual is anxious about unknown or uncertain situations and therefore establishes structure to avoid experiencing this continuous threat (Hofstede, 2001). A highly uncertainty avoiding individual will try to avoid uncertain situations by establishing rules and rituals to control social behaviors to ensure that the constant threat of unpredictability is overcome to a certain extent (Hofstede, 2011). Apparently, a global pandemic will arouse high degree of anxiety for each individual, and the anxiety is associated with uncertainty (Jiwani et al., 2021). For highly uncertainty avoiding individuals, the uncertainty inherent in life is perceived as a continuous threat that must be fought (Hofstede, 2011). For them, controlling behaviors (such as vaccination or compliance with epidemic prevention measures) may be the best and fastest way to overcome the threat and uncertainty caused by COVID-19. However, research indeed indicated that the perceived threat of infection reduced vaccine hesitation (Khubchandani et al., 2021), although the uncertainty caused by vaccine novelty leaded to distrust of vaccine safety that was the most important determinant of COVID-19 vaccine hesitation (Thunström et al., 2021). In the absence of effective medicine, vaccine is more likely to be the best choice for reducing the threat of COVID-19. In other words, uncertainty avoidance should be positively associated with COVID-19 vaccination intention.

Long-term/Short-term Orientation

This dimension relates to an individual's choice of focusing efforts on the future, present or past (Hofstede, 2011). A short-term oriented individual prefers to maintain and honor traditions, and views societal changes with suspicion, while a long-term oriented individual takes a more pragmatic approach to value thrift and efforts in modern education as a way to prepare for the future (Hofstede

Insight, 2021). In other words, a long-term oriented individual prefers to learn from others, values efforts, and plans for the future (Hofstede, 2011). Apparently, a global pandemic will impact and threaten each individual's life in the present and the future, especially for those highly concern about the future. For long-term oriented individuals, the most important events in life will occur in the future (Hofstede, 2011), such as the effect of COVID19. In other words, long-term orientation should be positively related to COVID-19 vaccination intention.

Masculinity/Femininity

This dimension explains how individuals perceive material achievements, human concerns and gender roles. Individuals high in masculinity prefer for achievement, heroism, assertive and material rewards for success, and emphasize specific gender roles, while individuals high in femininity prefer for cooperation, humility, caring for the weak and quality of life, and emphasize gender equality (Hofstede, 2011). In other words, individuals high in femininity are expected to display more cooperative behaviors when taking steps to prevent the COVID-19 outbreak. However, a previous finding indicated that masculinity had no significant effect on a country's infection rate of COVID-19, even though countries high on masculinity were expected to be less effective in implementing COVID-19 prevention measures (Gokmen et al., 2020). Nonetheless, for ambitious individuals seeking for success in material rewards like those high in masculinity, COVID-19 should have a significant impact on their lives (such as unemployment) and worry about their career in the future. They may be willing to receive COVID-19 vaccination if the vaccine is the only and fast way to stop the spread of epidemic. In other words, masculinity should be positively related to COVID-19 vaccination intention.

Power Distance

This dimension refers to the degree to which the less powerful members

of a society accept and expect the uneven distribution of power; for example, less powerful individuals are expected to be told what to do, and children are taught to obey (Hofstede, 2011). Individuals high in power distance accept a hierarchical order, in which each member has a place in a society and no further justification is needed; those high in power distance tend to be less questioning of authority in general (Hofstede, 2001). Research indeed indicated that individuals in high power distance were reluctant to refuse a request from or disagree with the authority, but prioritized the authority's opinions (Jung & Kellaris, 2006). A further finding also suggested that individuals in low power distance were more susceptible to statistical evidence than expert evidence (Hornikx & Hoeken, 2007). Moreover, studies indicated that power distance had a negative effect on COVID-19 infection rates (Gokmen et al., 2020; Messner, 2020), as members of low power distance countries were less willing to accept instructions from authorities, and this could have adverse effects on controlling an outbreak of COVID-19 (Messner, 2020). In other words, high power distance individuals tend to follow the advice of the authorities, obey social norms, and support government policies, such as CDC's COVID-19 vaccination regulations. Therefore, power distance will be positively related to COVID-19 vaccination intention.

Indulgence/Restraint.

This dimension involves the gratification versus control of basic human desires related to enjoying life (Hofstede, 2011). Indulgence refers to an individual being allowed relatively freedom to satisfy basic and natural human needs related to the enjoyment of life, while restraint refers to an individual's satisfaction of needs being suppressed and regulated by strict social norms (Hofstede Insight, 2021). Indulgent individuals pursue simple joys and having fun, and believe themselves to be in control of their own lives and emotions;

in opposite, restrained individuals believe other factors control their lives and emotions (Hofstede, 2011). Although a global pandemic will impact each individual's lives, it is assumed that indulgence-oriented individuals will be less threatened by and less involved in COVID-19. Previous studies indeed indicated that a country's indulgent tendency was positively linked to the outbreak (Messner, 2020) and infection cases of COVID-19 (Gokmen et al., 2020), as cultures accustomed to higher level of indulgence had more difficulty coordinating themselves during an outbreak. (Van Bavel et al., 2020). In other words, indulgent oriented individuals will find it harder to accept the restrictions (e.g., vaccination) imposed to prevent outbreaks of COVID-19. Specifically, indulgence should be negatively related to COVID-19 vaccination intention.

Persuasive Appeals

Persuasive appeals are strategies used during argumentation and communication. As vaccine hesitancy varies across societies, different communication strategies will be needed within and between countries (Warren & Lofstedt, 2021). However, some cultural values will be correlated with certain persuasive strategies (Hetsroni, 2000). Based on the culture of Taiwan and the context of COVID-19, four persuasive appeals were evaluated: *moral, fear, punitive and reward appeals*. These persuasive messages will be assessed to examine the impact of individual cultural values on COVID-19 vaccination intention in Taiwan.

Moral Appeals

Health campaigns, especially if publicly funded, need to be assessed along their ethical premises (Hansen et al., 2018). A previous research in the U.K. suggested that campaigns and messaging about a COVID-19 vaccination could consider emphasizing the risk of COVID-19 to others and the necessity

for everyone to be vaccinated (Sherman et al., 2020). Moral messages can be organized along an argumentative spectrum ranging from altruistic to an almost obligatory claim (Hansen et al., 2018). Studies in moral psychology have shown that the acceptance of moral/social duties is an important and prevalent mode of behavior in modern societies (Hansen et al., 2018; Kohlberg, 1982). A research in Hong Kong indicated that citizens' collective responsibility was associated with higher tendency to receive COVID-19 vaccines (Kwok et al., 2021). In addition to social responsibility, the decision for vaccination should also consider relatives and others, especially in a family-oriented collective society, like Taiwan. In other words, moral appeals which relate to altruism, social and family responsibilities should motivate collective oriented individuals to receive the COVID-19 vaccine. Therefore, the following hypothesis is posed.

H1. Moral appeals will mediate the relationship between collectivism and COVID-19 vaccination intentions.

Fear Appeals

In health campaign, fear-arousal messages are the most commonly used persuasive strategies to gain compliance. "Fear appeals are persuasive messages designed to scare people by describing the terrible things that will happen to them if they do not do what the message recommends" (Witte, 1992, p. 329). According to the Extended Parallel Process Model (EPPM), the content of health-related interventions needs to contain two basic elements: threat and efficacy information. Threat messages must describe the severity or the extent of threat and the susceptibility of a threat outcome; efficacy information or solutions must contain the effectiveness of the recommended actions and evidence of the recipient's ability to carry out the recommended actions (Witte, 1992). For countries like Taiwan with low infection rates (Chang et al., 2021), the persuasive strategy based on fear appeals with evidence and solutions may be

more effective in arousing public vigilance about the possibility of an outbreak at any time (perceived severity and susceptibility) and providing effective and feasible solutions such as vaccination (perceived efficacy). However, research findings suggested that the receiver's cultural background should be taken into account when developing a fear appeal message (Jansen & Kroef, 2019). A further research also suggested that differences in responses to a health-related fear appeal could be explained by personal characteristics (Meulenaer et al., 2015). For highly uncertainty avoiding individuals, the uncertainty inherent in life is perceived as a constant threat that must be dealt with (Hofstede, 2011). Therefore, vaccination is more likely to be the best behavior and fastest way for them to respond to the uncertainty caused by COVID-19 if the persuasive message contains a threat and provides a solution, such as evidence-based fear appeals.

As mentioned earlier, a global pandemic may have more impact and threat on masculinity and long-term oriented individuals. Individuals high in masculinity tend to value material achievements (Hofstede, 2021), and their lives will be more likely to be affected by economic recession derived from COVID-19. In order to let their lives return to normal, they may try to find a way out of the pandemic, and perhaps solution-based fear appeals are likely to be accepted by them. Relatively speaking, the global pandemic will have a greater impact and threat on long-term oriented individuals due to their concerns about the future. To remove the obstacle in their future, long-term oriented individuals may have to engage themselves in the issue of COVID-19, such as thoughtfully assessing the impact of the pandemic on their lives, searching for relevant information, and coming up with the best solution. The more the recipient of a message engages with the issue, the more salient, relevant, or important the issue becomes to the recipient and the greater the recipient's motivation to consider the message (Petty & Cacioppo, 1986). In other words, the more they are involved

with COVID-19, the more threat they perceive. Threat will evoke fear which will motivate recipients of the message to follow the recommendation to overcome their fears (Witte, 1992). These cognitive processes mediate the persuasive effects of a fear appeal by arousing protective motivation which is an intervening variable that arouses, sustains, and directs activity to protect the self from danger (Maddux & Rogers, 1983). In other words, individuals who are uncertainty avoidant, masculine, and long-term oriented may find evidence-based fear appeals (that evoke fear and offer solutions) persuasive. Therefore, the following hypotheses are proposed.

H2. Fear appeals will mediate the relationship between uncertainty avoidance and COVID-19 vaccination intentions.

H3. Fear appeals will mediate the relationship between long-term orientation and COVID-19 vaccination intentions.

H4. Fear appeals will mediate the relationship between masculinity and COVID-19 vaccination intentions.

Punitive and Reward Appeals.

According to behaviorism (Skinner, 1974), human behaviors are not derived from initiative or self-will, but rather are the result and response to either positive or negative reinforcement, such as punishment and reward. The experiences individuals receive with rewards and punishments in life will shape how they behave (Skinner, 1974). For instance, punitive regulations against COVID-19 had played a significant role in Singapore and Taiwan, such as fines for violating home quarantine and not allowing entry into public buildings without masks. Law and order have always been an effective way to protect the public welfare during an outbreak. According to Hofstede, Singapore and Taiwan are countries with relatively large power distance. (Hofstede Insight, 2021). For societies with higher power distance, citizens are more likely to comply with punitive

regulations against COVID-19 (Chang et al., 2021). Reliance on punitive appeals is inevitable in societies with high power distance and low COVID-19 infection rates, as low infection rates may lead citizens to be overly optimistic about their susceptibility to COVID-19 and thus reduce their willingness to be vaccinated.

In addition to punitive appeals, the promise of external rewards (such as a round-trip flight to Japan or a cash reward) may urge people who already comply with certain measures (such as wearing a mask) to take more action (such as receiving a vaccine). The delivery of both punishments and rewards involves the demonstration of power (Tjosvold, 1995). Since individuals with high power distance are more likely to accept a hierarchical order in society (Hofstede Insight, 2021), they are more likely to be motivated by demands for punishment and reward from authorities. Perhaps, they may be more likely to obey CDC's punitive or reward appeals to receive a COVID-19 vaccine.

Moreover, research findings suggested that highly restrained countries usually established strict social norms to govern and control their citizens' behaviors (DeBode et al., 2020); by contrast, high indulgent countries will prioritize enjoyment and the satisfaction of needs over restrictions (Messner, 2020). In other words, indulgent oriented individuals may prefer to follow joyful and rewarding strategies to receive a COVID-19 vaccination. Based on the above discussion, the following hypotheses are posed.

H5. Punitive appeals will mediate the relationship between power distance and COVID-19 vaccination intentions.

H6. Reward appeals will mediate the relationship between power distance and COVID-19 vaccination intentions.

H7. Reward appeals will mediate the relationship between indulgence and COVID-19 vaccination intentions.

Methods

A survey research was selected for this study to investigate the correlation among individual cultural values, persuasive strategies, and vaccination intentions. To ensure the validity and reliability of the measurement instrument, a pilot study was conducted on 208 college students at a small university. To check the convergent and discriminative validity of each scale, exploratory factor analysis was conducted via principal component procedure, varimax rotation and an eigenvalue of 1.0 for factor extraction in the pilot study and the main study. The scale reliability was confirmed by Cronbach's alpha values. Finally, all valid and reliable scales were enclosed in a cross-sectional online survey conducted before the vaccine available in Taiwan. Since the survey was for all adult citizens in Taiwan, the convenience and snow-ball sampling were applied to recruit participants nationwide.

Measurement Instruments

There were three scales used in this study to measure above three variables. In addition to the scale of individual cultural values (Yoo et al., 2011), scales of persuasive appeal and vaccination intention were developed in this study. As suggested by previous findings (e.g., Corbu et al., 2021; Grüner & Krüger, 2020; Kadoya et al., 2021; Kwok et al., 2021; Thunström et al., 2021; Tsai et al., 2021), demographic variables of gender, age, education and flu uptake were also included in the questionnaire. All scales were in a 7-point Likert-type format ranging from "strongly disagree" to "strongly agree."

Persuasive Appeals

The Persuasive Messages Scale (PMS) was developed in this study to measure the effectiveness of persuasive appeals for COVID-19 vaccination.

Based on previous findings from EPPM and behaviorism discussed in the earlier section, four sub-scales were developed: moral, punitive, reward, and fear appeals. Each subscale consisted of 3 items of persuasive messages. Respondents were asked to rate how persuasive each message was in convincing them to get the COVID-19 vaccine. The four dimensions of PMS consisted of 12 items and had reliability coefficient alpha from .92 to .95 in this study. Before the 12 items of PMS, a scenario was presented. (see table 1)

Table 1.

Content of Persuasive Appeals Scale

Scenario:
A COVID-19 vaccine is coming soon. To promote the citizens to get vaccinated, the CDC is planning for a vaccination campaign. Please help evaluate the persuasiveness of the following persuasive messages. Please assess the likelihood that each message will convince you to receive a COVID-19 vaccine.

Moral appeals:

1. To protect our families and love one, lets' get vaccinated against COVID-19.
2. To protect the health of our communities and humans, lets' get vaccinated against COVID-19.
3. For the health of future generations, lets' get vaccinated against COVID-19.

Punitive appeals:

4. Every citizen must be vaccinated against COVID-19. Violators will be fined NT$50,000!
5. Individuals who have not been vaccinated against the COVID-19 virus are not allowed to enter public buildings.
6. Individuals who have not been vaccinated against the COVID-19 virus are not allowed to take public transportation!

Reward appeals:

7. Taking COVID-19 vaccine will earn an opportunity to participate in the Million Lottery Draw!
8. Taking COVID-19 vaccine will get a cash gift of NT$1000 immediately!
9. Taking COVID-19 vaccine will earn an opportunity to receive a round-trip air ticket to Japan

(continued)

Table 1. (continued)

Fear appeals:

10. The fatality rate of COVID-19 pandemic is three times that of seasonal flu, only vaccination can free us from its threat!
11. The COVID-19 virus will coexist with us on the Earth forever, only vaccination can free us from its threat.
12. The COVID-19 virus can cause lung damage permanently, only vaccination can free us from its threat!an cause lung damage permanently, only vaccination can free us from its threat!

Vaccination Intentions

The Vaccination Intention Scale (VIS) was developed in this study to measure participants' willingness to receive a COVID-19 vaccine as soon as it is available. The VIS consisted of 4 items and had reliability coefficient alpha .96 in this study.

1. I will get a COVID-19 vaccine as soon as it becomes available.
2. I will convince my family and friends to get the COVID-19 vaccine.
3. I will help persuade people to get the COVID-19 vaccine.
4. I would still choose to get the COVID-19 vaccine, even if I have to pay for the vaccination myself.

Individual Cultural Values

The Six-Dimensional Scale of Individual Cultural Values (CVSCALE) was employed to measure individual cultural values. Developed by Yoo, Donthu and Lenartowicz (2011), the original CVSALE contained only five dimensions: power distance, uncertainty avoidance, collectivism, long-term orientation, and masculinity. To update Hofstede's (2021) theory, the sixth dimension of cultural values, indulgence/restraint was added in this study. The indulgence subscale consisted of 4 items developed in this study.

1. I won't worry if I can't finish my task on time.

2. I enjoy each day, and never plan for tomorrow.
3. It's important to enjoy life and have fun instead of worrying about the future.
4. It's meaningless to worry about the future because fate is responsible for my future.

Finally, the Six-Dimensional Scale of CVSCALE was translated into Mandarin Chinese via back translation techniques. This scale consisted of 27 items in a 7-point Likert-type format and had reliability coefficient alpha from .73 to .92 in this study.

Participants

Prior to the launch of the COVID-19 vaccine in Taiwan, adult citizens were invited to participate in the study through personal recommendation via email, Line, and Facebook, between January 10 and February 12, 2021. After removing 17 foreign respondents, a total of 458 respondents participated in this study including 159 (34.7%) males and 299 (65.3%) females. Their average age was 43.47 (SD=15.79) between 18 and 80. Participants' level of education ranged from middle school (3.49%), high school (10.70%), associate's (13.54%), bachelor's (50.22%), master's (16.81%) to doctorate (4.59%), and 3 (0.65%) of them were unidentified. Among the 458 participants, 70 (15.28%) were college students and 388 (84.12%) were non-students. All respondents were voluntarily participated in this study without compensation.

Results

Preliminary Analysis

Table 2 summarized the correlation, means, and standard deviations for each variable, as well as the reliability of each scale. Descriptive statistics indicated

that participants in this study were, on average, characterized by high uncertainty avoidance, collectivism, long-term orientation, restraint (low indulgence), and low power distance. Moral appeals were perceived as the most effective strategy in persuading our participants to accept the COVID-19 vaccine, following by fear, punitive, and reward appeals. In order to see the bivariate relationships among the demographic, independent and dependent variables, a correlation matrix was computed and reproduced. Gender and years of education were correlated with vaccination intention, but not age. Male and more educated participants were more likely to be vaccinated. With the exception of indulgence, five types of cultural values and four types of persuasive appeals were positively associated with the COVID-19 vaccination intentions.

Table 2

Pearson Correlations, Means, Standard Deviations and Reliablilty

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. gender	1													
2. age	-	1												
3. education	-	-	1											
4. moral appeals	-.08	.15**	-.16**	1										
5. punitive appeals	-.01	-.01	-.17**	.45**	1									
6. reward appeals	-.03	-.13**	-.10*	.28**	.47**	1								
7. fear appeals	-.10*	.18**	-.19**	.62**	.54**	.40**	1							
8. power distance	-.09*	-.13**	.02	.12*	.27**	.29**	.24**	1						
9. uncertainty avoidance	.02	.20**	-.19**	.37**	.19**	.12**	.34**	-.05	1					
10. collectivism	.06	.34**	-.25**	.39**	.22**	.16**	.40**	.07	.56**	1				
11. masculinity	-.19**	.27**	-.20**	.13*	.24**	.19**	.25**	.32**	.20**	.35**	1			
12. long-term orientation	-.09*	.31**	-.25**	.39**	.28**	.18**	.44**	.09*	.58**	.67**	.32**	1		
13. indulgence	-.13**	-.15**	.03	.07	.12*	.21**	.06**	.50**	-.10*	.06	.33**	.03	1	
14. intention	-.15**	.08	-.17**	.79**	.50**	.36**	.72**	.19**	.39**	.37**	.18**	.42**	.04	1
M	-	43.47	-	5.41	3.63	3.36	4.79	2.27	6.02	5.49	3.45	5.54	2.63	4.53
SD	-	15.79	-	1.52	2.11	2.09	1.77	1.48	1.08	1.34	1.64	1.03	1.41	1.86
Cronbach α	-	-	-	.95	.94	.92	.92	.91	.90	.92	.85	.73	.86	.96

n = 458

** p<.01 * p<.05

Test of Hypotheses

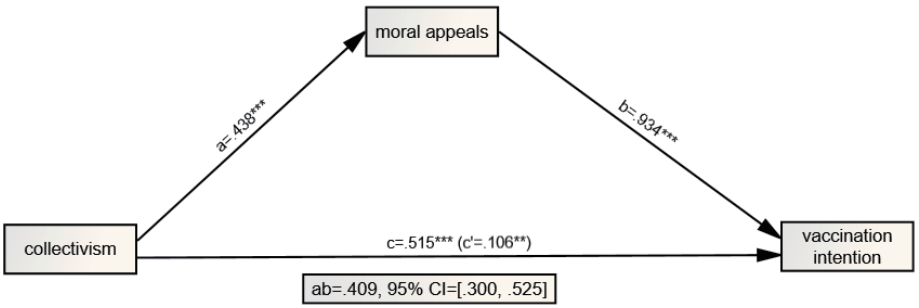
To test hypotheses, seven simple mediation models were specified to examine the indirect effects of 6 cultural values on vaccination intention through 4 persuasive appeals, and indirect effects were evaluated via Hayes PROCESS model number 4. Mediation pathways were assessed by evaluating 95% confidence intervals (CI) yielded via 5,000 bootstrapping resampling draws. Bootstrapping provides point estimates and confidence intervals to assess the significance or non-significance of a mediation effect; point estimates reveal the mean over the number of bootstrapped samples and a significant mediation effect can be reported if zero does not fall between the resulting confidence intervals of the bootstrapping method (Hayes, 2018).

From each simple mediation model (refer to figure 1 to 7), path a is a form of direct correlation between individual cultural values and persuasive appeals. Path b is a form of direct correlation between persuasive appeals and vaccination intentions. Path c is a form of direct correlation between individual cultural values and vaccination intentions. It can be seen that the product of a and b indicated an indirect effect of persuasive appeals on the relationship between individual cultural values and COVID-19 vaccination intention. An indirect effect exists when a, b and c are statistically significant, and the 95% of CI does not include zero (Hayes, 2018).

Results indicate that hypothesis H1 to H6 were supported, but H7 was not. Collectivism had an indirect effect on vaccination intention via moral appeals because a, b and c were significant, and the 95% of CI did not include zero [.300, .525]. Therefore, H1 was supported. (see figure 1)

Figure1

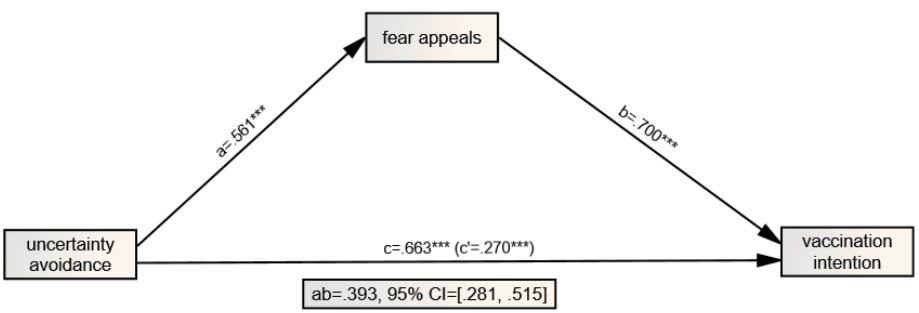
The indirect effect of collectivism on vaccination intention via moral appeals



Uncertainty avoidance had an indirect effect on vaccination intention via fear appeals because a, b and c were significant, and the 95% of CI did not include zero [.281, .515]. H2 was supported. (see figure 2)

Figure 2

The indirect effect of uncertainty avoidance on vaccination intention via fear appeals

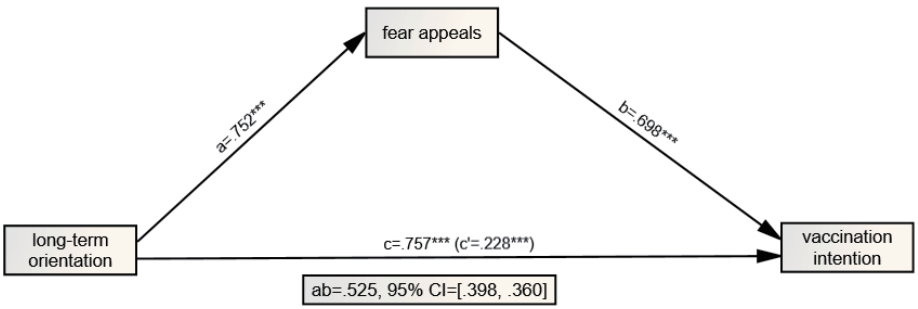


Long-term orientation had an indirect effect on vaccination intention via fear appeals because a, b and c were significant, and the 95% of CI did not include

zero [.398, .360]. H3 was supported. (see figure 3)

Figure 3

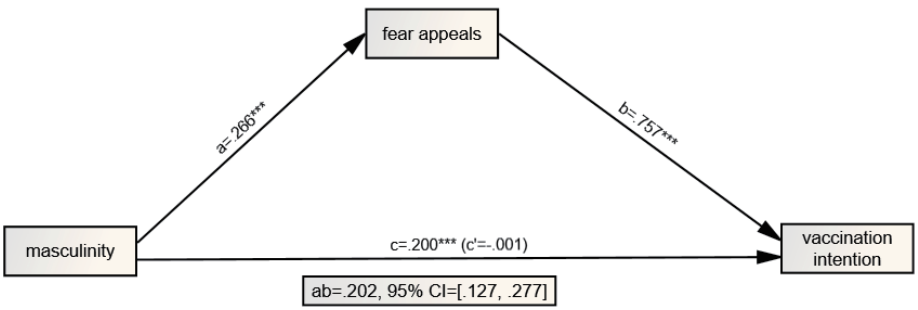
The indirect effect of long-term orientation on vaccination intention via fear appeals



Masculinity had an indirect effect on vaccination intention via fear appeals because a, b and c were significant, and the 95% of CI did not include zero [.127, .277]. H4 was supported. (see figure 4)

igure 4

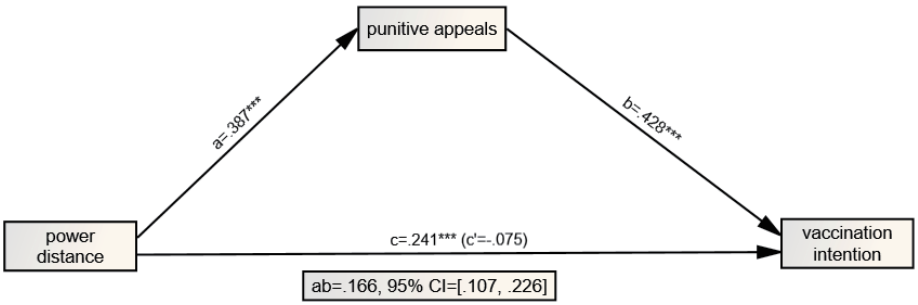
The indirect effect of masculinity on vaccination intention via fear appeals



Power distance had an indirect effect on vaccination intention via punitive appeals because a, b and c were significant, and the 95% of CI did not include zero [.107, .226]. H5 was supported. (see figure 5)

Figure 5

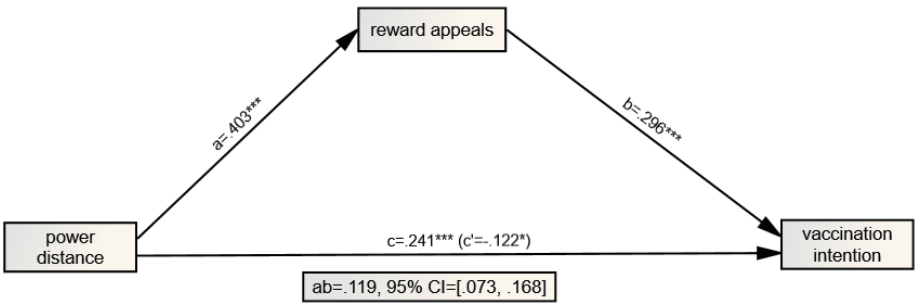
The indirect effect of power distance on vaccination intention via punitive appeals



Power distance had an indirect effect on vaccination intention via reward appeals because a, b and c were significant, and the 95% of CI did not include zero [.073, .168]. H6 was supported. (see figure 6)

Figure 6

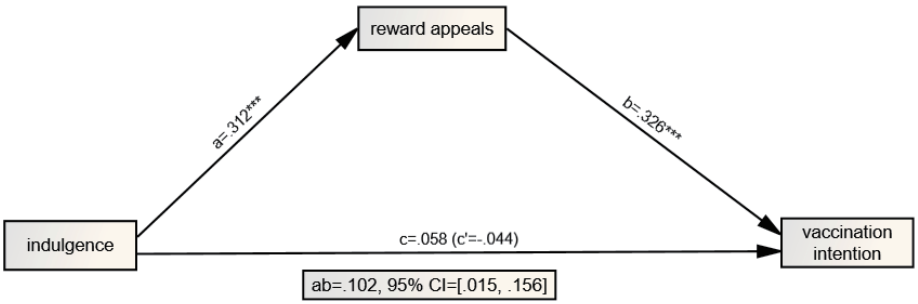
The indirect effect of power distance on vaccination intention via reward appeals



However, hypothesis H7 was not supported. The seventh mediation model resulted in a nonsignificant effect of indulgence on the COVID-19 vaccination intention (Coeff=.058, SE=.062, p>.05). (see figure 7)

Figure 7

The indirect effect of indulgence on vaccination intention via reward appeals



Discussion

This study had examined the correlations among individual cultural values, persuasive messages and vaccination intentions to explain how these variables interact and influence citizens' compliance with vaccination policy in the context of COVID-19 crisis in Taiwan. Results indicated that persuasive appeals mediated the relationship between five dimensions of cultural values and COVID-19 vaccination intention. These results were in line with previous findings in other countries. For example, a large-scale analysis of cultural values and vaccination intentions at the country and individual levels also found that people from countries with higher levels of cultural collectivism had higher COVID-19 vaccination intentions, and that collectivistic individuals were more likely to receive the COVID-19 vaccine (Leonhardt & Pezzuti, 2022). Collective responsibility was associated with higher tendency to receive the COVID-19 vaccine (Kwok et al., 2021), and moral appeals should be highly considered in collective societies, like Israel (Hetsroni, 2000). Power distance and collectivism positively impact a country's COVID-19 infection rate (Gokmen et al., 2021). Based on previous findings and Hofstede's six dimensions of cultural values theory, the results of this study further provided a more comprehensive and holistic understanding of the relationship among individual cultural values, persuasive appeals and vaccination intentions.

In contrast to prior studies, the finding that indulgence had no significant effect on COVID-19 vaccination intention failed to support hypothesis H7. However, differences in social context may influence message effect on indulgent individuals. As our data indicated, 458 participants were high in uncertainty avoidance, long-term orientation, and collectivism, but low in power distance and indulgence. These characteristics imply a group of highly self-controlled citizens who take epidemic prevention seriously. When the majority of citizens are highly

uncertainty avoidant, collectivist, and long-term oriented, indulgent individuals may experience pressure and cannot ignore the efforts of others in preventing COVID-19. This may provide an explanation for a nonsignificant association between indulgence and vaccination intentions.

The above findings also partially explain why Taiwan has been able to successfully prevent any domestic COVID-19 outbreaks. Taiwan is subject to a political blockade by the World Health Organization and can only rely on itself to collect data and fight the epidemic based on its own experience. Because citizens are highly uncertainty-avoidant, collectivist, and long-term oriented, they are highly concerned about COVID-19 issues and committed to implementing epidemic prevention measures (e.g., wearing masks in public places, washing hands frequently, and undergoing quarantine as needed). In order to reduce public uncertainty, the CDC has held a press conference daily since the beginning of 2020 to answer questions related to the COVID-19 epidemic.

Implications and future research

The findings provide both theoretical and practical implications that demonstrated the utility of six dimensions of individual cultural values and four types of persuasive appeals in understanding COVID-19 vaccination intentions. For researchers, this study is significant because it is the first examples of investigating the relationship between individual cultural values and COVID-19 vaccination intentions. It explores an understudied aspect of the communication strategies in fighting against the spread of COVID-19. Its findings suggest that taking six dimensions of cultural values at individual level is a viable way to examine an individual's cultural orientations. Its findings also suggest that health communicators need to look at individual cultural values as a segmentation variable for audience-adaptive selection and message designing purposes in various health campaigns. Finally, individual cultural values, persuasive appeals

and vaccination intentions are likely interact with each other in a dynamic way over the development of the epidemic. Further research may explore these variables in a longitudinal design that will provide more robust evidence of the association of these variables.

A persuasive appeal may be able to motivate individuals hold a particular cultural value for a specific reason. This brings us to the issue of audience segmentation when using persuasive appeals. Practitioners should be aware of different individuals' attitudes towards persuasive messages and corresponding vaccination intentions. The results of this study suggest that policymakers should tailor prevention measures to the individual cultural values of their audiences. COVID-19 communications and messaging should be consistent with individual cultural values to increase the likelihood that individuals will comply with preventive measures. For instance, "T*o protect our families and love one, lets' get vaccinated against COVID-19*." may be a preferred communication strategy for collectivists, whereas "*For your health, get vaccinated against COVID-19*." may be more fit in individualists. For individuals high in power distance, messages may include the emphasis that actions are recommended by authorities. For individuals who are uncertainty avoidant, masculine and long-term oriented, evidence-based messages that contain threats and offer solutions may be an appropriate communication strategy.

Limitations

There were several limitations of this study. First, there is a risk of inaccurate self-reporting and selection bias because the data were collected through an online survey. Since a COVID-19 vaccine was not yet available in Taiwan at the time of data collection, this study could only investigate factors associated with intention to be vaccinated rather than factors related to vaccination. Our outcome variable was a measure of behavioral intentions,

rather than actual behavior, which was likely to be an underestimation of future behavior. Given that one's actual behaviors solely depends on one's intention (Armitage & Conner, 2000), research on COVID-19 vaccination intention remains relevant and valuable. Second, most of the research in the field of communication cited in this article draws on US-centric literature, which may bias the results of this study. While we frame our argument by citing white and non-white authors in accordance with the #CommunicationSoWhite initiative, the majority of scholars cited in this study are white. Nonetheless, the findings of this study provide evidence of a non-white population. It is hoped that this study can inspire further cross-cultural comparative studies.

In addition to high homogeneity resulting from convenience and snowball sampling, this study is also limited by unbalanced sample structure (e.g., gender and educational level). Since participants were recruited on a voluntary basis, females were intuitively more altruistic than males (Rand, Brescoll, Everett, Capraro, & Barcelo, 2016) and were more willing to participate in un-remunerative research. Among 458 participants, 299 were females, and 159 were males. A high proportion of female respondents might have biased our sample to those who were more feminine individuals. Females tend to be moral-oriented that might bias the result related to moral appeals. Future research may provide incentive for participants in the process of sample recruitment.

Furthermore, participants were recruited through referrals from the researchers' social networks so that most respondents were highly educated. Of the 458 respondents, there were 393 (85.8%) reported having a college degree. This may limit the results that can be generalized to different social groups in Taiwan and compromise the external validity of this study. This may also be the reason why 458 respondents reported lower power distance scores. This finding was unexpectedly inconsistent with Hofstede' data that indicated Taiwan was a high power distance society. The reason for the inconsistency may be that highly

educated citizens have been influenced by Western cultures during the process of globalization. This could be the case of Taiwanese culture which has gradually become Americanized as it has moved from totalitarianism to democracy over the past few decades. However, future research may clarify this issue by comparing the disparity of cultural values cross generations and social classes. Despite these problems with the characteristics of sample, the scales used in this study yielded data that were statistically significant and consistent with previous findings.

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檢視說服訴求對個人文化價值觀與COVID-19疫苗接種意願的中介關係

鄭嫥嫥

摘要

本研究的目的是檢驗說服訴求對個人文化價值觀與COVID-19疫苗接種意願之間的中介關係。研究的資料是在2021年初，台灣提供公費COVID-19疫苗之前，所進行的一項橫斷面網路問卷調查。最後共有458名成年的台灣國民參與填答問卷，所得數據以Hayes的PROCESS統計軟體分析中介效應以驗證研究假設。結果顯示，四種說服訴求對個人文化價值觀與COVID-19疫苗接種意願之間的中介關係確立。集體主義的文化價值觀通過道德訴求間接影響疫苗接種意願。不確定性迴避、陽剛性和長期取向等三種文化價值觀通過恐懼訴求間接影響疫苗接種意願。權力距的文化價值觀通過懲罰和獎勵訴求間接影響疫苗接種意願。本文最後討論了研究結果的運用與研究限制。

關鍵詞：COVID-19、疫苗接種意願、個人文化價值觀、說服訴求、健康促進

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失智症輔助療法：系統性文獻回顧及統合分析

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摘要

失智症尚乏有效療法，因而聚焦輔助及另類療法，探討輔助療法之成效。應用醫學標題/關鍵字於4個資料庫/平台，搜尋2022年3月1日以前之文獻，依納入標準篩選結果，進行文獻質性綜整，以Cochrane第2版偏差風險評估工具，進行偏差風險評估，利用RevMan 5.4.1軟體進行統合分析，以漏斗圖評估發表偏差。本研究包含8個隨機對照試驗，受試對象1,091人，應用簡易智能檢查評量失智症患者介入成效，整體文獻平均差/95%信賴區間為2.09 [-0.58, 4.76]，同時進行介入方式、年齡及樣本數等次群組分析，各群組效果量全部趨向有利實驗組。失智症患者可能著重中醫藥膳療法，同時透過辨證論治，依證處方、用藥，較能提升介入成效；非屬高齡患者，可能改善症狀幅度較大；未來可以規劃具有類推性的常態分配樣本，進行隨機、盲性

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對照試驗，進一步探討複合型輔助療法之成效，或是納入更多文獻進行統合分析，探討介入成效。

關鍵詞：中醫藥膳、失智症、穴位按摩合併芳香療法、多元運動

壹、前言

65歲以上老年人口已於2018年超過14%，成為高齡社會，預計將於2025年超過20%，成為超高齡社會，歷時7年就由高齡社會轉為超高齡社會（國家發展委員會，2022）。65歲以上老年人失智症盛行率為7.78%，隨著年齡增加而上升（衛生福利部，2022），由於人口老化速度愈來愈快，表示伴隨失智人口也會快速增加，尤其因應老化社會的時間非常急迫。

失智症是由腦部神經疾病、身體系統性疾病或使用藥物、成癮物質而引起持續性認知功能下降的疾病，超過90%患者會有精神行為症狀(behavioral and psychological symptoms of dementia, BPSD)（邱銘章，2017），係由多種病因引起的一系列症狀，其中BPSD包含類似精神疾病的情緒、知覺及行為障礙，臨床上分為五個面向：認知/知覺（妄想、幻覺）、動作（踱步、徘徊、重複動作、身體攻擊）、口語（吼叫、呼喊、重複言語、言語攻擊）、情緒性（精神異常欣快、憂鬱、冷漠、焦慮、易怒）及植物性（睡眠、食慾障礙）(Cloak & Al Khalili, 2022)。從而失智症除有認知障礙外，也會合併精神行為症狀。

自然療法係屬初級衛生保健，包含許多治療與預防疾病的輔助方式(Smith & Logan, 2002)，輔助/另類療法 (complementary and alternative medicine, CAM) 包含中醫、針灸、穴位/指壓按摩、順勢療法、草藥療法、按摩療法、脊骨神經醫學、整骨療法、反射療法、催眠療法及精神/心靈療法等方式 (Kemppainen et al., 2018)。由於失智症目前尚乏有效療法 (Russell et al., 2023)，只有少於5%可逆性失智症，經過治療可能恢復（邱銘章，2017），同時考量科學發展難免會有無法滿足人類需求之處，自然療法如能成為輔助醫療，互補彼此不足之處，形成整體醫療體系，而能作為失智症輔助療法，其介入成效值得探討，此為研究動機。

源於《黃帝內經》強調藥食同源 (Ho, 1993)，各種中藥方劑與針灸已經用於失智症的預防及治療 (Li et al., 2021)，其中當歸即屬典型的藥食同源中藥，研究顯示當歸可以透過多種膳食補充，緩解阿茲海默症及其併發症，其膳食補充劑成分對於阿茲海默症的介入作用，包含維生素B12、葉酸、精胺酸及油酸 (Long et al., 2022)，從而缺乏維生素B12、葉酸等營養成分即有可能導致失智症（邱銘章，2017），如屬氣血虧虛證型者，黃耆及當歸組成之當歸補血湯，可能係屬緩解阿茲海默症綜合症狀的有效方劑 (Gong et al., 2019)。基此藥食同源理念，中醫藥膳療法即以中藥之藥效配合食物營養及特有成分，並在中醫固有辨證論治原則下，依患者體質及疾病性質施行藥膳療法（鄧振華、蘇勳璧，2002），即以結合藥、食之膳食形式作為疾病的預防及治療方法。

穴位/指壓按摩與針灸的原理相同，但屬非侵入性且不需要複雜的設備，因係透過身體本身（例如手指）在經絡穴位施加壓力，藉以活絡體內之氣/行氣的技法，有助於恢復體內能量/氣的平衡 (Jahnke et al., 2010)，此以傳統中醫為基礎 (Fogaça et al., 2021)，常以隨證循經遠近配穴，按摩相關經絡循行穴位，係屬改善失智症精神行為症狀具有前景的療法 (Harris et al., 2020)。芳香療法是以植物產物或芳香植物油萃取精油及芳香族化合物，可以透過按摩或局部塗抹、吸嗅及水浸的方式進行 (Abraha et al., 2017)，作為輔助介入措施，用於治療廣泛的健康問題，包含失智症患者的睡眠不足及精神行為症狀 (Nguyen & Paton, 2008)。臨床研究顯示，穴位/指壓按摩合併芳香療法可以減輕失智症精神行為症狀 (Fung & Tsang, 2018)，其在改善失智症激躁症狀 (agitation) 之成效大於單獨應用芳香療法 (Yang et al. 2015)，可能有其協同增效作用，尤其對於嗅覺功能不佳患者或老年人，導致吸嗅精油能力變弱，透過穴位按摩經其皮膚吸收精油，可能係屬較佳的協同介入方案。

美國運動醫學會 (American College of Sports Medicine, ACSM) 歷來建議老年人運動處方，應該合併有氧運動、肌力訓練、柔軟度訓練及平

衡感訓練 (ACSM, 2013)，實證結果發現多元運動可以改善認知功能、憂鬱及生活品質，尤其身體衰弱的人改善程度更大 (Kim et al., 2020)，由於衰弱會增加認知功能下降的風險，相對認知障礙也會增加衰弱的風險，有其身體衰弱及認知障礙之交互作用 (Robertson et al., 2013)，從而多元運動對於輕度認知障礙或失智症患者的整體認知功能有其正面效果，特別是運動方案包含有氧運動 (Venegas-Sanabria et al. 2022)，可能是一種具有前景的失智症介入策略 (Borges-Machado et al. 2021)。綜合上述研究結果及機轉，失智症患者可能透過多元運動改善身體衰弱，進而改善認知功能、精神行為症狀及生活品質。

中醫已為一般民眾接受之醫療，並經廣泛實證研究及臨床治療結果，證明有其療效；同理，中醫既然有其療效，本於藥食同源理念，藥膳自亦有其立論基礎及療癒效果，同時為符文獻檢索充分性 (adequacy of the literature search) 關鍵要項 (Shea et al., 2017)，介入方案包含「中藥」之文獻亦屬研究範疇。考量不乏基礎與臨床研究，結合多元療法進行實證研究 (Li et al., 2020)，由於穴位按摩、芳香療法及多元運動療法，也有諸多實證顯示可以改善失智症相關症狀，本研究因而聚焦中醫藥膳療法、穴位按摩合併芳香療法及多元運動療法等輔助療法，探討介入成效。

貳、材料與方法

一、檢索策略

本研究選擇PubMed、Cochrane Library、Airiti Library及臺灣博碩士論文知識加值系統等資料庫/平台，搜尋2022年3月1日以前之文獻，應用下列醫學標題/關鍵字及布林邏輯 (boolean logic) 檢索文獻：

（一）中文：失智症 AND（中醫藥膳 OR 中藥 OR 穴位按摩合併芳香療法 OR 多元運動）AND（簡易智能檢查 OR 簡易智能量表 OR 簡短智能測驗）。

（二）英文：“Dementia”[MeSH Terms] AND (traditional Chinese medicine diet OR Chinese medicine diet OR traditional Chinese medicine OR Chinese medicine OR aroma-acupressure OR aromatherapy acupressure OR aromatherapy plus acupressure OR aroma-massage OR multicomponent exercise) AND (“mental status and dementia tests”[MeSH Terms] OR mini-mental status examination OR mini-mental state examination OR MMSE)。

參考PICO架構 (Higgins et al., 2022) 訂定納入標準，其納入條件如下：（一）失智症患者；（二）介入方案：包含中醫藥膳/中藥、穴位按摩合併芳香療法或多元運動；（三）對照組：常規照護或無上述介入方案；（四）成效指標：包含簡易智能檢查 (mini-mental status examination, MMSE)；（五）隨機對照試驗、系統性文獻回顧或統合分析文獻；（六）人體試驗；（七）成效指標之估計值包含平均值、標準差、標準誤或信賴區間。

二、資料擷取

以PICO臨床問題之架構，進行文獻選取及數據擷錄，逐一擷取納入文獻之特性資料彙整成表，包含研究者/年代、研究對象特性、研究設計、介入方案及介入成效等項目資料。

三、偏差風險評估

以Cochrane第2版偏差風險 (risk of bias, RoB 2) 評估工具，評讀納入文獻之品質。透過RoB 2評估工具5個評估面向，進行偏差風險評估，每個面向回答一個或多個引導問題，藉此判斷「低偏差風險 (low risk of bias)」、「不明/有疑慮 (some concerns)」或「高偏差風險 (high risk of bias)」，同時形成整體偏差風險 (overall risk-of-bias) 判斷 (Sterne et al., 2019)，依序對應綠色、黃色及紅色圖例表示之。

四、統合分析

應用Review Manager 5.4.1 (RevMan 5.4.1) 軟體進行統合分析，包含檢定整體異質性、統計顯著性、次群組分析及發表偏差。檢定 χ^2 值之 $p<0.1$ 或 $I^2>50\%$ (Higgins et al., 2022)，表示顯著異質性，選用隨機效果模式；反之，選用固定效果模式，依其合併效果量/平均差及95% CI判讀效果大小、有無差異、可靠程度及影響組別（實驗組或對照組），至於平均差估計值則是實驗組與對照組相同測量量表之平均值差異 (difference in means) (Higgins et al., 2022)。由於95% CI與Z檢定之p值二者之間存在邏輯對應關係，當其95% CI沒有跨越無效基準線 (null line)，或是Z檢定之p值<0.05 (Higgins et al., 2022)，表示實驗組與對照組達到顯著差異水準；反之，未達顯著差異水準。應用漏斗圖評估發表偏差，理想情況之下，大致近似對稱的倒置漏斗 (Higgins et al., 2022)，從而圖形顯示左右對稱，表示可能沒有發表偏差；反之，表示可能有發表偏差。

叁、結果

一、研究選擇

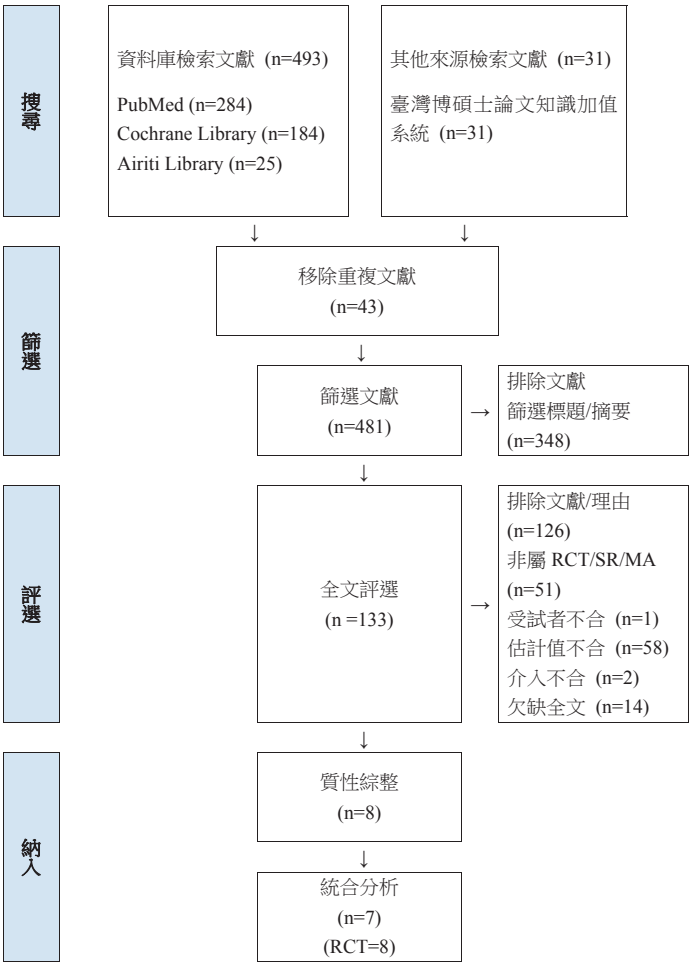
依據檢索策略於4個資料庫/平台搜尋資料，合計檢索524篇相關文獻，先以EndNote書目管理軟體移除重複文獻43篇，再以標題及摘要過濾348篇，嗣依納入標準評選結果排除126篇，合計納入7篇。其中1篇為系統性文獻回顧/統合分析文獻 (Yang, et al., 2017)，經依檢索策略所訂之納入條件評讀後納入2篇，總計納入質性綜整8篇 (Chen, et al., 2011; Chen, et al., 2015; Fung & Tsang, 2018; Gebhard & Mess, 2022; Iwasaki, et al., 2004; Pakdaman, et al., 2015; Sáez de Asteasu, et al., 2019; Zhang, et al., 2015)。

納入質性綜整8篇文獻，其中1篇因未呈現MMSE介入後之檢測值

(Gebhard & Mess, 2022)，未予納入統合分析；另有1篇受試者分為3組，每組試驗方案不同，其中2組 (G1、G3) 介入均含穴位按摩＋芳香療法 (Fung & Tsang, 2018)，由於受試對象及試驗方案均不同，且依研究設計，另一組 (G2) 即是作為試驗方案之對照組，因而視為2個試驗，最後納入統合分析7篇文獻/8個試驗；其文獻檢索流程如圖1所示。

圖1

研究文獻檢索流程圖



二、研究特性

本研究納入質性綜整文獻8篇，均屬發表於期刊之隨機對照試驗文獻，發表年份介於2004-2022。樣本數介於33-370人，總數為1,134人，受試者失智等級介於輕度-重度，男性407人（占40.7%），女性593人（占59.3%），其餘未呈現性別人數134人，各篇受試者平均年齡介於67-88歲。

研究介入對應本研究介入方案之類型，其中歸屬中醫藥膳/中藥5篇；歸屬穴位按摩合併芳香療法1篇；歸屬多元運動2篇。研究結果成效指標MMSE達到顯著差異者，計有5篇；未達顯著差異者，計有2篇；未呈現估計值1篇。茲將納入質性綜整文獻彙整如表1所示。

表1

研究文獻質性綜整一覽表

作者 年份	研究 設計	樣本數(E/C) 失智等級 性別(男/女) 年齡(M±SD)	介入	MMSE/結果
Chen et al., 2011	RCT	134(32/33/37/32) MMSE≤23 性別 (未呈現) 年齡 68.2±6.4 (原始數據)	**CM** G1: 中藥+復健 G2: 中藥+針灸 G3: 中藥+針灸+復健 G4: 西藥(piracetam/欣坦膜衣錠)	G1: 19.78±4.38 G2: 19.62±3.76 G3: 20.82±4.72 G4: 19.56±3.98 G3: 短期記憶面向 1.88±0.88, P<0.05

（續下表）

表1 （續）

作者 年份	研究 設計	樣本數(E/C) 失智等級 性別(男/女) 年齡(M±SD)	介入	MMSE/結果
Chen et al., 2015	RCT	66(33/33) MMSE: 10-24 性別 E: 20/13 陽氣虛組: 18 陰氣虛組: 15 C: 18/15 年齡 E: 67.9±13.3 C: 69.2±15.7	**CM** 陽氣虛組: 參附注射液 陰氣虛組: 參麥注射液	前測 E: 16.8±4.3 C: 15.2±4.7 後測 E: 27.7±2.0 C: 17.7±2.4 同組前後測及組間 後測：p<0.05
Fung & Tsang, 2018	RCT	60(20/20/20) 失智等級 G1: 10.30±6.64 G2: 9.30±6.53 G3: 6.48±0.41 性別 G1: 4/16 G2: 7/13 G3: 7/13 年齡 G1: 82.13±7.69 G2: 84.33±7.85 G3: 84.11±7.33	**AA** G1: AA+運動 G2: 認知+運動 G3: AA+認知	CMMSE Cantonese Version of Mini-mental Status Examination G1: 10.00±6.67 G2: 8.55±6.55 G3: 10.80±6.74 p=0.33
Pakdaman et al., 2015	RCT	264(66/66/66/66) 輕度-中度 性別 G1: 25/41 G2: 31/35 G3: 29/37 G4: 29/37	**CM** G1: donepezil G2: rivastigmine G3: MLC601 G4: galantamine G1、G2、G4: 膽鹼酯酶抑制劑	G1: 17.36±3.71 G2: 17.24±3.43 G3: 17.47±2.21 G4: 17.30±3.09 p=0.92

（續下表）

表1 （續）

作者 年份	研究 設計	樣本數(E/C) 失智等級 性別(男/女) 年齡(M±SD)	介入	MMSE/結果
		年齡 G1: 71.8±5.5 G2: 73.2±4.7 G3: 71.8±5.7 G4: 72.5±5.2	G3: 中藥	
Zhang et al., 2015	RCT	144(72/72) 輕度 性別 E: 26/46 C: 29/43 年齡 E: 72.79±6.76 C: 72.97±6.59	**CM** 益腎化濁湯	E: 22.37±5.31 C: 20.60±4.52 P<0.05
Gebhard & Mess, 2022	RCT	63(34/29) 輕度-中度 性別 E: 7/27 C: 7/22 年齡 E: 86.09±7.64 C: 86.34±7.49	**ME** 暖身+阻力+平衡+耐力+緩和	E: 18.59±4.60(基線) C: 19.90±4.60(基線) MMSE (結果未呈現)
Iwasaki et al., 2004	RCT	33(16/17) 輕度-重度 性別 E: 3/13 C: 4/13 年齡 E: 85.6±6.4 C: 83.5±9.3	**CM** 八味地黃丸	E: 13.5±8.5(基線) E: 16.3±7.7(後測) P<0.01 C: 16.8±6.3(基線) C: 增加0.6 [-2.0, 0.8]

（續下表）

表1 （續）

作者 年份	研究 設計	樣本數(E/C) 失智等級 性別(男/女) 年齡(M±SD)	介入	MMSE/結果
Sáez de Asteasu et al., 2019	RCT	370(185/185) 輕度 性別 E: 85/100 C: 76/109 年齡 E: 87.6±4.6 C: 87.1±5.2	**ME** 阻力+平衡+步行/步態訓練	E: 22±5(基線) 增加： 2.10 [1.75, 2.46] C: 23±4(基線) 增加： 0.27 [0.08, 0.63] 組間：p<0.001

註：

1.C=對照組；E=實驗組；M=平均值；MMSE=簡易智能檢查；RCT=隨機對照試驗；SD=標準差。

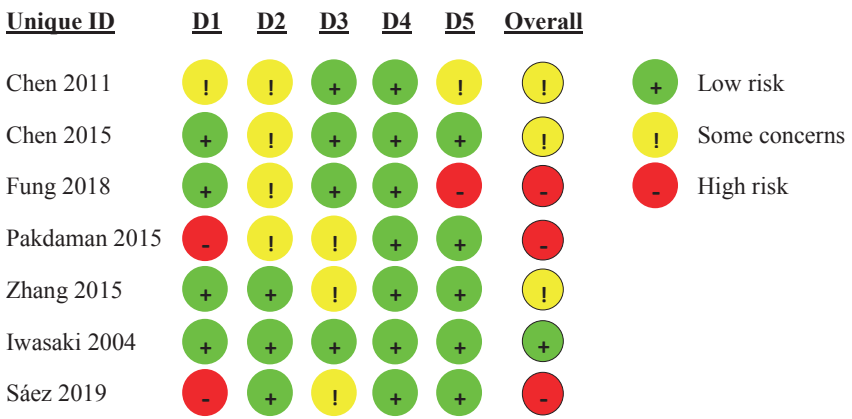
2.介入以對應本研究介入方案類型註記：CM=中醫藥膳/中藥；AA=穴位按摩合併芳香療法；ME=多元運動。

三、文獻品質

以RoB 2評讀納入文獻品質結果，低風險約占66%，高風險約占8%，不明/有疑慮約占26%。其中第4面向/結果測量全為低風險；2篇非屬盲性試驗，於第1面向評屬高風險；1篇選擇性報告結果，於第5面向評屬高風險，整體文獻屬於中等品質。茲將個別及整體文獻偏差風險評估彙整如圖2所示。

圖2

納入文獻偏差風險評估



D1 Randomisation process

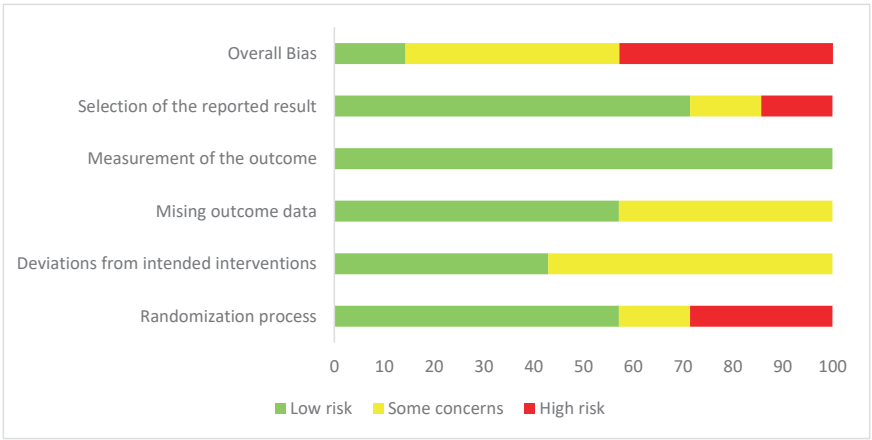
D2 Deviations from the intended interventions

D3 Missing outcome data

D4 Measurement of the outcome

D5 Selection of the reported result

(a) 個別文獻偏差風險評估



(b) 整體文獻偏差風險評估

四、統合結果

本研究納入8個RCT進行統合分析，合計實驗組514人、對照組577人，應用MMSE評量失智症患者介入成效，整體異質性檢定結果，I^2=97%，選定隨機效果模式進行估計，合併效果量MD=2.09，95% CI: -0.58, 4.76，Z-test/p=0.12，實驗組與對照組尚未達到顯著差異水準；其統合分析森林圖如圖3 (a) 所示。

整體異質性檢定結果，呈現顯著差異，經以8個RCT不同介入方式、年齡及樣本數進行次群組分析，選定隨機效果模式進行估計，評量MMSE之介入成效，森林圖彙整如圖3 (b)-(d) 所示；其統合分析結果如下：

(一)介入方式

1.CM組(中醫藥膳/中藥)：合併效果量MD=2.37，95% CI: -2.22, 6.96，Z-test/p=0.31，實驗組與對照組沒有顯著差異。

2.AA組(穴位按摩合併芳香療法)：合併效果量MD=1.85，95% CI: -1.06, 4.75，Z-test/p=0.21，實驗組與對照組沒有顯著差異。

3.ME組(多元運動)：合併效果量MD=0.83，95% CI: 0.33, 1.33，Z-test/p=0.001，實驗組與對照組呈現顯著差異；亦即實驗組介入後的MMSE評分顯著高於對照組。

(二)年齡

1.≥70：合併效果量MD=0.69，95% CI: 0.22, 1.15，Z-test/p=0.004，實驗組與對照組呈現顯著差異；亦即實驗組介入後的MMSE評分顯著高於對照組。

2.<70：合併效果量MD=5.30，95% CI: -3.97, 14.56，Z-test/p=0.26，實驗組與對照組沒有顯著差異。

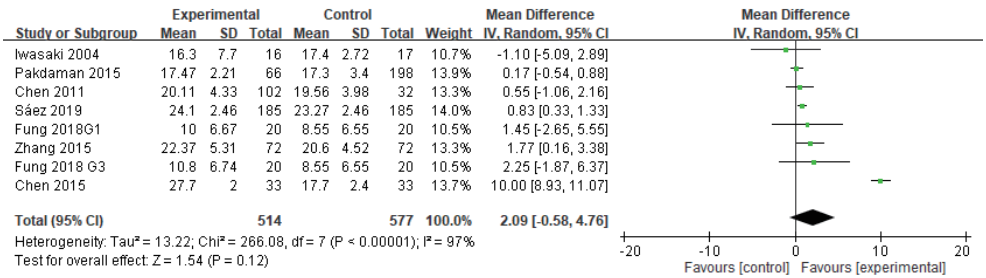
（三）樣本數

1.≤100：合併效果量MD=3.32，95% CI: -2.98, 9.62，Z-test/p=0.30，實驗組與對照組沒有顯著差異。

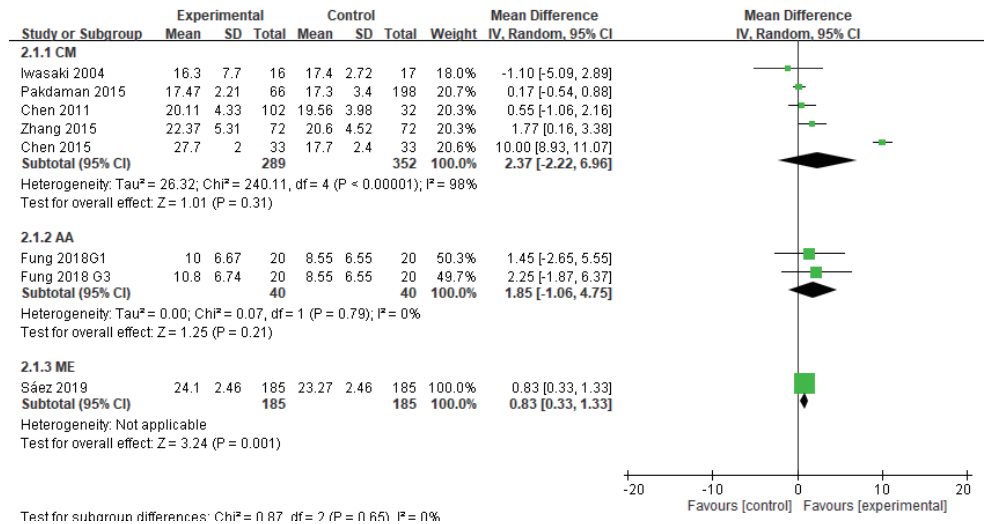
2. >100：合併效果量MD=0.67，95% CI: 0.16, 1.19，Z-test/p=0.01，實驗組與對照組呈現顯著差異；亦即實驗組介入後的MMSE評分顯著高於對照組。

圖3

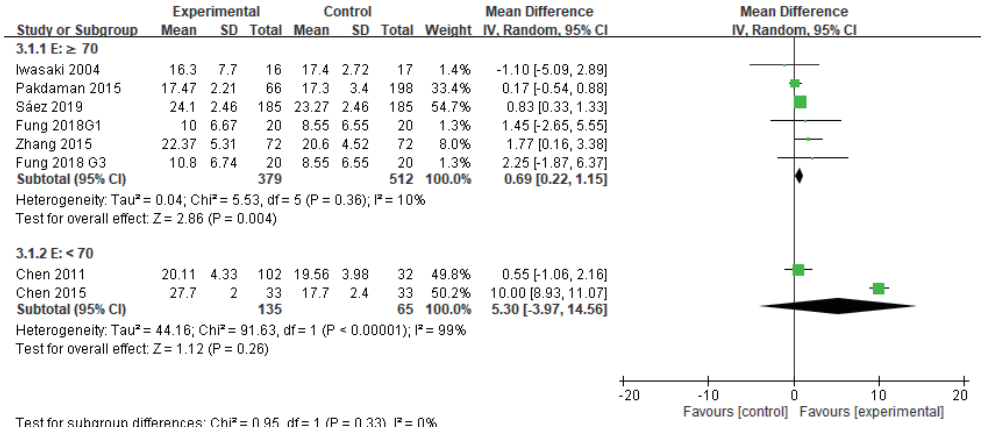
成效指標MMSE森林圖



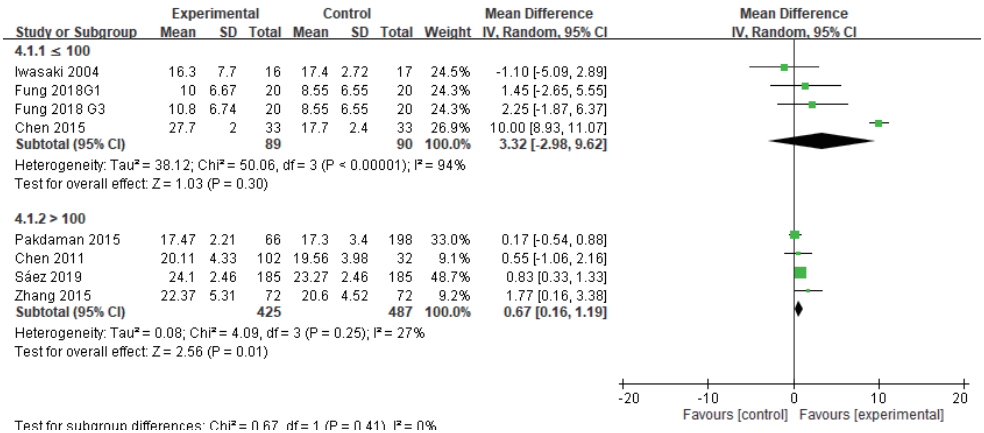
(a)整體文獻成效指標MMSE森林圖



(b)介入方式次群組成效指標MMSE森林圖



(c) 年齡次群組成效指標 MMSE 森林圖

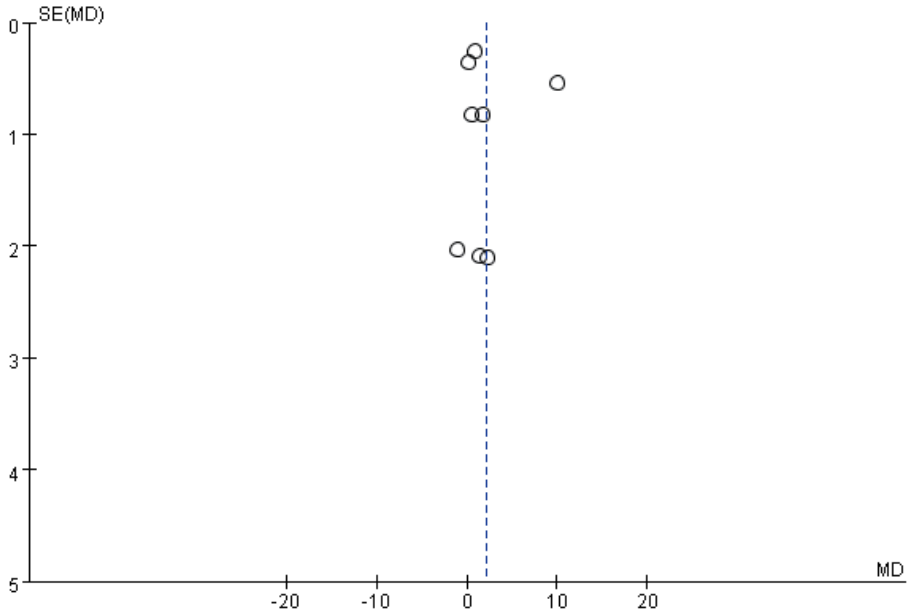


(d) 樣本數次群組成效指標 MMSE 森林圖

應用漏斗圖評估發表偏差結果，散布圖形大致近似對稱的倒置漏斗，表示可能沒有顯著偏差；其估計漏斗圖如圖 4 所示。

圖4

發表偏差評估漏斗圖



肆、討論

一、研究文獻

本研究納入質性綜整文獻8篇，各篇樣本數介於33-370人，失智等級介於輕度-重度，平均年齡介於67-88歲，差異甚大，不僅可能影響整體異質性，如果失智等級過於嚴重 (Yu, et al., 2012)，或是年齡偏高 (Soni, et al., 2014)，均有可能影響介入成效；樣本數未達常態分配 (Mascha & Vetter, 2018)，或是受試對象流失人數過多 (Higgins et al., 2022)，則有統合分析結果產生偏差之可能，諸如此類因素，都有可能導致效果量偏低或影響差異程度。

文獻品質經以RoB 2進行偏差風險評估結果，其中因非盲性或無資訊者，D1：2篇評屬高風險、1篇評屬不明/有疑慮；D2：4篇評屬不明/有疑慮；D3：3篇受試者流失率>5%評屬不明/有疑慮；D5：1篇選擇性報告評屬高風險，從而研究設計如果非屬隨機、盲性或是小樣本，甚至人為選擇性報告結果，均有可能評屬高風險偏差，嚴重影響文獻品質。

整體異質性檢定結果，I^2=97%，呈現高度異質性 (Higgins, et al., 2003)，經進行敏感度分析，發現移除Chen等人 (2015) 文獻，I^2即呈大幅下降趨勢，其中整體文獻：97→0%；介入方式/CM組：98→20%；樣本數/≤100：94→0%（年齡/<70：原為99%，移除後只剩1篇，爰無I^2估計值）。經再檢視Chen等人 (2015) 文獻，其效果量MD=10.00，確實大幅高於其他研究文獻，而且95% CI: 8.93, 11.07，實驗組與對照組呈現顯著差異，可能係因實驗組受試者透過辨證論治，依其證型進行不同介入（陽氣虛組：參附注射液；陰氣虛組：參麥注射液），從而大幅提高介入成效，此係符合中醫理論之施治原則，爰予納入統合分析。

二、統合效果

本研究納入8個RCT進行統合分析，除就整體文獻進行統合分析外，並就不同介入方式、年齡及樣本數進行次群組分析，考量各個RCT之樣本數、失智等級及平均年齡差異甚大，且其I^2多呈較大數值，表示可能存在異質性 (Cordero & Dans, 2021)，因而均以隨機效果模式進行估計；其統合分析結果討論如下：

（一）整體文獻統合分析結果，95% CI: -0.58, 4.76，實驗組與對照組雖然未達顯著差異水準，惟其合併效果量MD=2.09，趨向有利實驗組，而且介入有其一定程度之成效，從而複合型輔助療法值得進一步探討。

（二）介入方式次群組分析結果，效果量MD依序為CM組：2.37 [-2.22, 6.96]、AA組：1.85 [-1.06, 4.75]、ME組：0.83 [0.33, 1.33]，CM組及AA組沒有顯著差異，ME組呈現顯著差異，三種介入之效果量

全部趨向有利實驗組，雖然次群組差異檢定結果沒有顯著差異（χ^2值之p=0.65），惟因CM組效果量大於其他二組，從而可能著重中醫藥膳療法，同時參酌Chen等人 (2015) 研究設計，透過辨證論治 (Yu, et al., 2012)，依證處方、用藥進行藥膳療法，較能提升介入成效。至於AA組及ME組部分，考量AA組樣本數偏少，ME組只有1個RCT，尚難論斷介入成效。

（三）年齡次群組分析結果，參考老年分群定義，以70歲為分界值 (Schwartz, 2015)，效果量MD依序為<70：5.30 [-3.97, 14.56]、≥70：0.69 [0.22, 1.15]，雖然次群組差異檢定結果沒有顯著差異（χ^2值之p=0.33），考量<70效果量大於≥70，從而推論非屬高齡之失智症患者，可能透過介入可以較大幅度改善症狀；年齡偏高患者，介入成效可能有限。

（四）樣本數次群組分析結果，效果量MD依序為≤100：3.32 [-2.98, 9.62]、>100：0.67 [0.16, 1.19]，≤100效果量大於>100，可能包含效果量MD高達10.00之Chen等人 (2015) 文獻，惟其整體效果量未達顯著差異水準，>100則達顯著差異水準，而且≤100信賴區間大幅大於>100，表示≤100檢定結果較不可靠，從而RCT樣本數仍以具有類推性的常態分配樣本為宜，以期提升研究結果可靠程度及外在效度 (Banzi, et al., 2016)。

三、研究限制

本研究礙於資源有限，檢索資料庫及文獻均有侷限性，不易取得大量高度品質文獻，從而限縮研究規模，系統性文獻回顧及統合分析僅予納入MMSE成效指標，其餘衡量指標未予納入分析，導致納入統合分析文獻較少，研究結果可能不夠完整，而且可能存在偏差風險，尤其研究結果之解釋，更應謹慎、斟酌，乃至應用漏斗圖評估發表偏差之RCT未達10個，其統計檢定力也有可能較低 (Higgins et al., 2022; Sterne, et al., 2011)。另外，男女罹患失智症人數差異甚大，當應進行次群組分析，惟因受限樣本男女分組型態，無法明確劃分男女二群，爰未進行性別次群

組分析。

《刺胳針》委員會2020年發表失智症預防、介入及照護報告略以：失智症12個危險因子，包含教育程度低、高血壓、聽力障礙、吸菸、肥胖、憂鬱、身體活動不足、糖尿病、低度社交、過量飲酒、創傷性腦損傷及空氣污染，約佔全球導致失智症40% (Livingston et al., 2020)，相關問題值得探討，亦因礙於納入文獻有其侷限性，未能進行有無危險因子之次群組分析，難於進一步解釋或推論研究結果。

四、正念靜坐

已有研究結果顯示，結合認知行為療法、放鬆技巧、正念修習、芳香療法及穴位按摩等輔助療法，可以顯著減輕憂鬱、焦慮及壓力 (Tsang, et al., 2015)，也有探索有氧運動與正念修習對於老年人認知功能的協同作用之研究方案 (Salmoirago-Blotcher, et al., 2018)，相關研究顯示正念認知療法對於失智症患者的憂鬱症狀，可能是一種有用的介入措施 (Douglas, et al., 2022)，同時顯示正念可以減緩阿茲海默症患者認知障礙 (Quintana-Hernández, et al., 2016)，也能顯著改善失智症患者生活品質 (Churcher Clarke, et al., 2017)，從而結合正念靜坐 (mindfulness meditation) 之複合型輔助療法，對於失智症患者認知障礙及精神行為症狀之成效，值得進一步探討。

伍、結論

失智症患者可能著重中醫藥膳療法，同時透過辨證論治，依證處方、用藥，較能提升介入成效；非屬高齡之失智症患者，可能改善症狀幅度較大；未來可以規劃具有類推性的常態分配樣本，進行隨機、盲性對照試驗，進一步探討複合型輔助療法之成效，或是納入更多文獻進行統合分析，探討介入成效。

縮寫詞：AA=穴位按摩合併芳香療法，CI=信賴區間，CM=中醫藥膳/中藥，MA=統合分析，MD=平均差，ME=多元運動，MMSE=簡易智能檢查，RCT=隨機對照試驗，RoB=偏差風險，SR=系統性文獻回顧。

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Complementary Medicine for Dementia: Systematic Review and Meta-Analysis

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Abstract

There are still no effective therapies for dementia. Therefore, this study focuses on complementary and alternative medicine, investigating the effect of complementary medicine. Four databases/platforms were searched for studies before March 1, 2022, applying Medical Subject Headings/keywords. The results were screened according to the inclusion criteria. A qualitative synthesis, risk of bias assessment (using the Cochrane RoB 2 tool), and meta-analysis (using the RevMan 5.4.1 software) were performed, and publication bias was assessed with a funnel plot. This study included 8 randomized controlled trials with 1,091 subjects. The mini-mental status examination was used to evaluate the intervention effect of dementia patients. The mean difference/95% confidence interval of overall studies was 2.09 [-0.58, 4.76]. Meanwhile, subgroup analyses such as intervention method, age and sample size were performed. The effects of each group tended to be favorable to the experimental group. Dementia patients may focus on Chinese medicine diet therapy. The treatment based on pattern identification, pattern-based prescription and medication can improve the effectiveness of intervention. Those who are not elderly patients that may improve their symptoms by a greater margin. In the future, a sample of normal distribution with generalizability can be planned.

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A randomized, blinded controlled trial will be performed to investigate the efficacy of composite complementary medicine, or more studies will be included for meta-analysis to investigate the effectiveness of intervention.

Key Words: Chinese medicine diet, dementia, aroma-acupressure, multicomponent exercise

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澳門某大學學生隱形眼鏡保健行為及其相關因素研究—健康信念模式的應用

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摘要

目的：透過健康信念模式探討澳門某大學生的隱形眼鏡保健行為及其相關因素。

方法：透過文獻回顧，採用自編結構式問卷進行資料收集，以澳門某大學2021-2022學年的大學生作為研究對象，採分層隨機抽樣，共發出509份問卷，回收有效問卷397份，回收率約78.0%。

結果：研究對象的執行隱形眼鏡保健行為屬中上的程度，其中「隱形眼鏡保健知識」、「罹患性自覺」、「嚴重性自覺」、「行為有效性自覺」與隱形眼鏡保健行為有關。經複迴歸分析顯示，背景變項、隱形眼鏡保健健康信念、隱形眼鏡健康行動線索可以有效的預測「隱形眼鏡保健行為」，並可解釋其總變異量的13.2%。在所有的預測變項相互控制之下，研究對象就讀理工類學院者、隱形眼鏡保健知識越好者、隱形眼鏡保健行為有效性自覺越高者，其採取的隱形眼鏡保健行為越佳。

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建議：建議增加其健康推廣的途徑，以及在中學、大學的健康促進教材中，加入隱形眼鏡保健的內容。

關鍵詞：澳門、大學生、隱形眼鏡保健、健康信念模式

壹、前言

根據世界衛生組織（World Health Organization, WHO）2022年的資料指出，全球至少有22億人口視力受損，至少10億人的視力受損原本是可以預防或解決的（WHO, 2022）。而1.24億人口則因未矯正的屈光不正而患有近視、遠視或散光等視力不良問題，大部分視力不良者通過配戴眼鏡或隱形眼鏡來改善（WHO, 2020）。

對於近視的矯正，通常是透過配戴眼鏡或隱形眼鏡來矯正。人們可以使用許多不同的方法來改善視力，現時沒有一種方法是適合所有人的最佳解決方案，而隱形眼鏡是有效的選擇之一（Centers for Disease Control and Prevention of United States, 2018）。早期隱形眼鏡發展的目的，是用作矯正近視和角膜不規則散光，後來逐漸發展成為美觀用途。因應不少大學生選擇使用隱形眼鏡，對於部分沒有近視的學生亦因為美觀原因，開始使用瞳孔放大片或瞳孔變色片（Lim, Stapleton, & Mehta, 2019）。

現時全球隱形眼鏡配戴者的平均年齡為31歲（Morgan et al., 2013），以美國為例，有4,500萬人配戴隱形眼鏡，估計8%的隱形眼鏡配戴者年齡在18歲以下，18-24歲之間佔17%，25歲及以上的成年人配戴隱形眼鏡佔75%（Cope et al., 2017）。在英國，隱形眼鏡配戴者的數量從 1992年的160萬上升到2014年的350萬，到2016年已達370萬人配戴隱形眼鏡（Jazaa Alharbi & Abdullah Sarriyah, 2019）。在中國，2022年中國隱形眼鏡銷售額達130.9億元，比2020年大幅增長22.7%（香港貿易發展局，2022）。

隱形眼鏡能為使用者提供很多好處，但由於隱形眼鏡與角膜直接接觸，不當的使用習慣會導致眼部併發症發生，包括：過敏、角膜炎、角膜潰瘍等問題，嚴重者更可引致失明（CDC of USA, 2022）。研究指出，年輕人和青少年比老年隱形眼鏡配戴者更容易發生眼部感染（Chalmers

et al., 2011）。調查發現，超過99%的隱形眼鏡配戴者至少有一種可能導致眼部感染的隱形眼鏡衛生習慣，近三分之一的隱形眼鏡配戴者表示，曾經歷過因隱形眼鏡導致的眼睛發紅或眼睛疼痛而需要求診（Cope et al., 2015）。研究報告指出，老年人（87.5%）、年輕人（80.9%）和青少年（85.3%）鏡片配戴者至少出現一種隱形眼鏡保健的風險行為。青少年最常見的風險行為：沒有至少每年去看一次眼科醫生、戴隱形眼鏡睡覺或打盹，以及戴隱形眼鏡游泳。在年輕人和老年人中，最常見的風險行為是更換鏡片的時間間隔比規定的時間長、更換鏡片存儲盒的時間間隔比建議的時間長、戴隱形眼鏡游泳、以及戴隱形眼鏡睡覺或打盹，其中，在更換鏡片的時間間隔比規定的時間長、戴隱形眼鏡睡覺或打盹等風險行為方面，年輕人都比老年人常見（Cope et al., 2017）。一項美國和加拿大的研究顯示，對於日拋型隱形眼鏡，沒有正確遵從更換操作的發生率為12-13%（Dumbleton et al., 2013）。

1950年代，健康信念模式被提出來解釋人們的健康行為,受到醫療社會學者普遍的重視，它被廣泛運用於疾病行為、醫患關係、以及健康教育的研究中（李守義、周碧瑟、晏涵文，1989）。隨後被修訂用來探討人們之疾病行為、病人角色行為，及有關慢性病的行為（陳曉悌等，2003）。其最主要的哲理是：

健康是有高度價值而且是大部分人想要達到的目標（Janz & Becker, 1984）。而且認為行為和認知是可變的，所以患有疾病時所抱持的態度和動機，會直接影響其行為（Becker, 1974）。

近年多個研究指出，健康信念模式能有效預測及解釋個人的健康行為。透過文獻回顧，現時澳門暫未有針對大學生配戴隱形眼鏡保健行為的研究。因此，本研究以健康信念模式為理論基礎，探討大學生配戴隱形眼鏡保健行為的相關因素，期望能透過研究結果，喚起社會對大學生配戴隱形眼鏡行為的重視，引起學校、家長，以及衛生當局的關心及投入，改善大學生隱形眼鏡保健行為，從而提升其眼睛健康。

貳、材料與方法

一、研究架構

本研究為橫斷式研究，主要探討澳門大學生隱形眼鏡保健行為的相關因素，應用健康信念模式作為理論架構，以分析相關變項與隱形眼鏡保健行為的關係，研究架構如圖1所示。

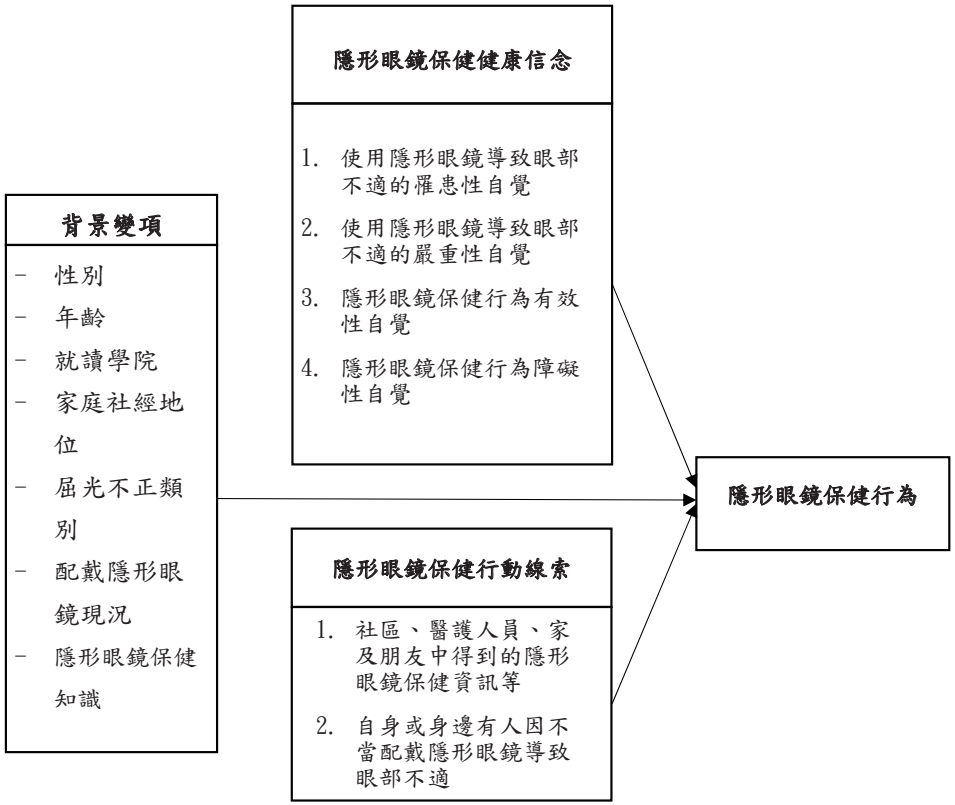

圖1　研究架構圖

二、研究對象

本研究以澳門某大學的大學生作為母群體，根據該大學最新公佈的學生資料，推算母群體人數約為8,180人，根據Krejcie 和Morgan的抽樣曲線表，當母群體人數為8,000-9,000人時，需要樣本量為367-368人。因本研究採取同時發放電子及紙本問卷方式，紙本問卷會在課堂上派發及回收，回收率通常較高，但電子問卷則較難以保證回收率。因此，本研究預估回收率約為85%，同時考慮廢卷等因素（預估約15%），經綜合考慮，本研究選取的樣本量應為509人，派發相應人數的問卷（Krejcie & Morgan, 1970）。

研究採用分層隨機抽樣法，按各學院實際的大學生數占全校學生的比例，計算出學生抽樣人數。再透過聯絡該大學各學院老師，協調將紙本或電子問卷派發給學生，同時自行在圖書館以紙本或電子方式收集問卷，派出問卷共509份，回收435份，其中有效問卷為397份，有效回收率為78.0%。

三、研究工具

本研究為橫斷面調查，透過文獻回顧，構建研究問卷，問卷共分為5個部分，包括：（1）背景資料；（2）隱形眼鏡保健健康信念量表；（3）隱形眼鏡保健行動線索量表；（4）隱形眼鏡保健知識量表；（5）隱形眼鏡保健行為量表。其中，隱形眼鏡保健健康信念量表及隱形眼鏡保健行為量表採用李克特氏（Likert Scale）五分法；對於隱形眼鏡保健行為量表，按程度分為「非常不可能」、「不可能」、「中立意見」、「可能」、「非常可能」五個選項，分別計分為1分至5分，計分方法：「非常不可能」計1分、「不可能」計2分、「不確定」計3分、「可能」計4分、「非常可能」計5分。根據測量結果，得分越高，表示採取隱形眼鏡保健行為越正確。對於「隱形眼鏡保健健康信念量表」，共分為4個分量表，包括「使用隱形眼鏡導致眼

部不適的罹患性自覺量表」、「使用隱形眼鏡導致眼部不適的嚴重性自覺量表」、「隱形眼鏡保健行為有效性自覺量表」、「隱形眼鏡保健行為障礙性自覺量表」，同樣採用李克特氏（Likert Scale）五分法，每題分為5個選項，得分越高代表相對應相關量表的程度越大；至於「隱形眼鏡保健行動線索量表」、「隱形眼鏡保健知識量表」採用「是」、「否」二分法的計算，得分越高表示獲得的隱形眼鏡保健信息越多，以及隱形眼鏡保健知識越豐富；

邀請健康促進與健康教育範疇、兒童及青少年護理範疇，以及臨床眼科醫生6名專家，就問卷內容的相關性、正確性及措辭合適性進行檢視及每一項評分，以計算「試題內容效度指標」（I-CVI），每題的CVI值均≥0.78，表明題目效度良好；在正式調查前，選取了30位對象進行預試，各量表Cronbach's α 值介於0.748至0.969，表示本研究問卷的可信度合適。

四、資料處理與分析

本研究採用SPSS 25.0 for Windows 軟體進行資料處理及統計分析，包括：描述性統計分析及推論性統計分析，推論性統計分析包括：單因數變異數分析、斯皮爾曼等級相關分析、複迴歸分析。

參、研究結果

一、研究對象背景變項之分布

研究對象中女性佔225人（56.7%），男性172人（43.3%），年齡最小的是17歲，年齡最大是40歲，平均年齡為20歲（標準差2.2歲）。而在本研究中，為便於統計，將性質相近的學院合併，其中「理工類」有32人（8.06%）、「法商類」（37.53%）149人、「醫藥類」40人(10.08％);「旅管

類」91人(22.92%)、「人文類」85人(21.41%)。家庭社經地位方面，高社經地位有249人(62.7%)、中社經地位有109人(27.5%)、低社經地位有39人(9.8%)。研究對象中之家庭社經地位以高社經地位為多，其次是中社經地位，最少是低社經地位。343人曾經有視力問題(86.4%)，54人是從來沒有視力問題(13.6%)。其中曾經有視力問題的人中，近視的有330人(83.1%)、遠視的有16人(4.0%)、散光的有185人(46.6%)，而其他視力問題的有2人(0.5%)；有配戴隱形眼鏡的有198人(49.9%)，沒有配戴隱形眼鏡的有199人(50.1%)；有配戴隱形眼鏡的人當中，62人(31.3%)因配戴隱形眼鏡導致眼部健康問題，而136人(68.7%)表示沒有因配戴隱形眼鏡導致眼部健康問題。購買途徑主要是從網上平台上購買；開始配戴時間主要從大學開始，每次配戴持續時間以少於8小時最多；近3成人表示曾經因配戴隱形眼鏡而導致眼部健康問題，其中以眼睛發紅最多。

此外，研究對象在隱形眼鏡保健知識得分的平均分為11.01分(標準差4.03分)，平均答對率為73.7%，隱形眼鏡保健的知識水平屬中上的程度。每題的答對率介乎45.8%至84.9%。其中「隱形眼鏡是否可與身邊人共用」的答對率最高(84.9%)，其次是「配戴隱形眼鏡前，會先檢查隱形眼鏡是否在有效期內」、「當配戴隱形眼鏡有眼部不適時，須及時求醫」，答對率為83.4%。相反，「長戴式隱形眼鏡無需每日進行清潔消毒，到期拋棄更換便可」的答對率最低，僅為45.8%，其次是「可以在任何地方購買隱形眼鏡，無需考慮其來源及安全性」，答對率為55.7%。

二、研究對象隱形眼鏡保健健康信念、行動線索之分布

研究對象隱形眼鏡保健健康信念中「使用隱形眼鏡導致眼部不適的罹患性自覺」總得分平均為52.10分(總分為13分至65分)，屬中上的程度，其中以「覺得因配戴隱形眼鏡不當，而導致眼部有異物感的可能性」最高(平均值4.34分)、「覺得因配戴隱形眼鏡不當，而導致失明的可能性」最

低(平均值3.39分);「使用隱形眼鏡導致眼部不適的嚴重性自覺」總數平均值為50.47 分(總分為13分至65分),屬中上的程度,其中以「因配戴隱形眼鏡不當,而導致失明的嚴重程度」最高(平均值4.17分)、「因配戴隱形眼鏡不當,而導致眼睛流淚的嚴重程度」最低(平均值3.58分);「隱形眼鏡保健行為有效性自覺」總得分平均45.65分(總分由12 分至60),屬中上的程度,其中以「做好隱形眼鏡保健,可以避免眼部發癢的有效性」最高(平均值3.85)、「做好隱形眼鏡保健,可以預防失明的有效性」得分最低(平均值3.75);「隱形眼鏡保健行為障礙性自覺」總得分平均25.46分(總分為8分至40分),屬中間的程度,其中以「做好隱形眼鏡保健要花費較多的時間」的障礙最高(平均值3.65分)、「做好隱形眼鏡保健,身邊的朋友不會支持」的障礙最低(平均值2.47分)。

研究對象隱形眼鏡保健行動線索表總分平均值為3.89分(答「否」計0分,答「是」計1分,總分為0分至8分),屬中等偏少的程度,其中以「從社區健康推廣活動中得到隱形眼鏡保健資訊」最多(平均值0.78)、「在購買隱形眼鏡的地方(如:眼鏡店),可得到隱形眼鏡保健資訊」則最少(平均值0.21)。

三、研究對象隱形眼鏡保健行為之分布

研究對象執行隱形眼鏡保健的行為總分平均值為3.89分,屬中上的程度,其中做得最好的是「不會與其他人共用隱形眼鏡」(平均值4.55分),其次是「會注意隱形眼鏡消毒液的有效期,定期更換」(平均值4.45分)。做得最差的是「會在網絡上購買隱形眼鏡」(平均值2.24分),其次是「會戴著隱形眼鏡的時候揉眼睛」(3.69分)。

四、研究對象背景變項、隱形眼鏡保健健康信念、隱形眼鏡保健行動線索與隱形眼鏡保健行為的關係

（一）研究對象背景變項與隱形眼鏡保健行為的關係

由表1與表2可知,研究對象的背景變項中只有「隱形眼鏡保健知識」與「隱形眼鏡保健行為」呈低程度的顯著正相關（r_s=.30，P<.01）。研究結果顯示，研究對象隱形眼鏡保健知識得分越高者，其採取的隱形眼鏡保健行為越佳。

表1

研究對象背景變項與隱形眼鏡保健行為之單因子變異數分析

變　項	類別	人數	平均值	標準差	F值	事後比較
性別	男性	172	60.33	11.37	2.82	
	女性	225	62.08	9.31		
就讀學院	理工類	32	62.59	9.15	1.49	
	法商類	149	60.42	11.49		
	醫藥類	40	64.10	6.75		
	旅管類	91	62.09	10.42		
	人文類	85	60.28	9.46		
家庭社經地位	高社經	249	61.51	10.47	0.82a	
	中社經	109	60.50	10.90		
	低社經	39	62.41	6.64		
是否有視力問題	是	343	61.63	9.89	1.62a	
	否	54	59.37	12.41		
是否配戴隱形眼鏡	是	198	61.21	9.33	0.05a	
	否	199	61.43	11.16		

註：1. n=397

2. a: Levene檢定變異數不相等，以Welch修正之F值

表2

研究對象年齡、隱形眼鏡保健知識與隱形眼鏡保健行為之斯皮爾曼等級相關分析

變　項	年 齡	隱形眼鏡保健知識
隱形眼鏡保健行為	-.062	.302***

註：*** $P < .01$

（二）研究對象隱形眼鏡保健健康信念與隱形眼鏡保健行為的關係

由表3可知，研究對象的「使用隱形眼鏡導致眼部不適的罹患性自覺」、「使用隱形眼鏡導致眼部不適的嚴重性自覺」、「隱形眼鏡保健行為有效性自覺」與「隱形眼鏡保健行為」呈低程度的顯著正相關（其統計值為：r_s=.134，P<.01；r_s=.151，P<.01；r_s=.192，P<.01）。研究結果顯示，研究對象的「使用隱形眼鏡導致眼部不適的罹患性自覺」、「使用隱形眼鏡導致眼部不適的嚴重性自覺」、「隱形眼鏡保健行為有效性自覺」得分越高者，其採取的隱形眼鏡保健行為越佳。

（三）研究對象隱形眼鏡行動線索與隱形眼鏡保健行為的關係

由表3可知，「隱形眼鏡行動線索」與「隱形眼鏡保健行為」間並無顯著相關存在（r_s=-.021，P>.05）。

表3

研究對象隱形眼鏡保健健康信念與隱形眼鏡保健行為之斯皮爾曼等級相關分析

變　項	使用隱形眼鏡導致眼部不適的罹患性自覺	使用隱形眼鏡導致眼部不適的嚴重性自覺量表	隱形眼鏡保健行為有效性自覺	隱形眼鏡保健行為障礙性自覺	隱形眼鏡保健行動線索
隱形眼鏡保健行為	.134**	.151**	.192***	- .034	-.021

五、研究對象背景變項、隱形眼鏡保健健康信念、隱形眼鏡保健行動線索對隱形眼鏡保健行為的預測

將背景變項、健康信念、行動線索等因素對研究對象執行隱形眼鏡保健行為之預測力，以複迴歸分析（Multiple Regression）進行分析處理。在進行複迴歸分析前，檢查各預測變項之間是否共線性（collinearity）的關係。本研究自變項之變異數膨脹因素（VIF）介乎於1.06至1.45，而容忍度（tolerance）則介乎於0.69至0.94之間，表明各預測變項並無共線性關係存在，可投入迴歸模式中處理。

由表4可見，研究對象之背景變項、與配戴隱形眼鏡有關的四個健康信念及隱形眼鏡保健行動線索可以有效地預測研究對象的隱形眼鏡保健行為，並可解釋其總變異量的13.2%（其統計值為R^2=.132, $F_{(16/397)}$=3.498, P<.001）；在各預測變項之中，「就讀理工類學院」（β=0.104, t=1.993, P<.05）、「隱形眼鏡保健知識」（β=0.250, t=4.645, P<.001）以及「隱形眼鏡保健行為有效性自覺」（β=0.163, t=3.008, P<.01）是預測研究對象採取隱形眼鏡保健行為的主要預測變項；其中以「隱形眼鏡保健知識」的解釋力最大，「隱形眼鏡保健行為有效性自覺」次之，而「就讀理工類學院」解釋力則最低。在所有的預測變項相互控制之下，研究對象就讀理工類學院者、隱形眼鏡保健知識越好者、隱形眼鏡保健行為有效性自覺越高者，其採取的隱形眼鏡保健行為越佳。

表4

研究對象背景變項、隱形眼鏡保健健康信念、隱形眼鏡保健行動線索對隱形眼鏡保健行為之複迴歸分析

變項	非標準化係數		標準化係數	
	B	標準誤	β	t值
性別 女性（參照組）	-1.316	1.084	-0.064	-1.214
年齡	-0.041	0.244	-0.008	-0.169
就讀學院 法商類（參照組）				
理工類	3.917	1.965	0.104	1.993*
醫藥類	2.137	1.795	0.063	1.191
旅管類	2.313	1.334	0.095	1.734
人文類	0.017	1.369	0.001	0.013
家庭社經地位 高社經地位（參照組）				
中社經地位	-1.347	1.132	-0.059	-1.190
低社經地位	0.609	1.734	0.018	0.351
視力問題 有視力問題（參照組）	-1.923	1.518	-0.064	-1.267
配戴隱形眼鏡 沒有配戴隱形眼鏡（參照組）	-2.094	1.175	-0.102	-1.781
隱形眼鏡保健知識	0.638	0.137	0.250***	4.645***
使用隱形眼鏡導致眼部不適的罹患性自覺	0.018	0.071	0.014	0.251
使用隱形眼鏡導致眼部不適的嚴重性自覺	0.030	0.053	0.032	0.562
隱形眼鏡保健行為有效性自覺	0.205	0.068	0.163*	3.008**
隱形眼鏡保健行為障礙性自覺	0.003	0.088	0.002	0.034
隱形眼鏡保健行動線索	0.109	0.244	0.023	0.448

註：R^2=.132，F值=3.598***

肆、討論

一、背景變項與隱形眼鏡保健行為的關係

本研究發現研究對象的隱形眼鏡保健行為屬中上的程度，反映大學生普遍能採取正確的隱形眼鏡保健行為。背景變項中，只有隱形眼鏡保健知識一項變項與隱形眼鏡保健行為具有相關性，這與Lim et al.（2009）曾指出家庭社經地位較佳者,會採取更好的隱形眼鏡保健行為的結果是不相符的。可能是由於澳門的生活環境及資源相對富裕，大學生普遍都有一定的財政來源及資助，因此家庭社經地位不一定會影響其在隱形眼鏡保健方面的花費，故對隱形眼鏡保健行為未必有影響。同時，亦與Leeamornsiri and Titawattanaku（2015）指出，醫學系的學生比非醫學系的學生的隱形眼鏡保健行為較好是不一致的，原因可能是本研究抽樣的醫學類學生的年級較低，其醫學知識未與其他科系的有明顯的不同所致。

二、隱形眼鏡保健健康信念、行動線索與隱形眼鏡保健行為的關係

本研究顯示，研究對象的「使用隱形眼鏡導致眼部不適的罹患性自覺」、「使用隱形眼鏡導致眼部不適的嚴重性自覺」、「隱形眼鏡保健行為有效性自覺」得分越高者，越有可能採取正確的隱形眼鏡保健行為，反映健康信念得分越高者，越有可能採取正向的預防保健行為。這與陳雅文(2010)、余漢濠(2014)及呂美華(2021)的結果是一致的，但與關澤霖(2018）研究指出健康信念四個構面與其預防行為並無關係的結果是不一致的，當然研究的議題不盡相同，結果可能有異，而健康行為是否皆可以由健康信念模式來解釋，也都有待更深入的了解。但本研究與上述前人的研究亦有可探討之處，包括與陳雅文的研究對象都為大學生，且

同是探討隱形眼鏡保健行為，可能因此得出健康信念是影響健康行為因素的結果，然而，對於研究對象均為澳門醫護人員的兩項研究，卻得出了相反的結論，可能是由於所探討的議題不盡相同，而導致了有關的偏差。但在文獻回顧過程中，總體看來健康信念模式仍是影響健康行為的一個重要因素。

本研究亦指出行動線索與隱形眼鏡保健行為之間並無關係，這與陳雅文（2010）、余漢濠(2014)、關澤霖(2018）指出行動線索越多，其採取預防保健行為的可能性越高的結果並不一致，這種研究結果的差異是研究議題、研究對象不同所致，還是行動線索與其採取預防保健行為間並非絕對有關，須深入探討。

三、隱形眼鏡保健行為的預測因素

研究結果指出，研究對象之背景變項、隱形眼鏡保健知識以及隱形眼鏡保健健康信念可以有效地預測研究對象的隱形眼鏡保健行為，並可解釋其總變異量的13.2%。在背景變項中，「就讀理工類學院」、「隱形眼鏡保健知識」是主要的預測變項，其中「隱形眼鏡保健知識」為主要預測變項，與陳雅文(2010)的結果相一致，同時在過往眾多的研究中，如焦建平（2014）、洪詩詩（2019）、呂美華（2021）均指出研究對象的知識可以有效預測其預防保健行為的。

而在隱形眼鏡保健健康信念中，「隱形眼鏡保健行為有效性自覺」是主要的預測變項，這與余漢濠(2014)研究指出「行動有效性自覺」具預測力部分相一致，但這與Livi et al.(2017) 指出「嚴重性自覺」才是最重要的預測變項，Janz and Becker(1984) 及官蔚菁(2004)指出「行動障礙性自覺」是健康行為最強之預測因子，以及李守義等（1989)指出最有力的指標是「自覺罹患性」皆不一致。可見健康信念模式在不同的健康議題及不同的對象應該有不同的效果，四個不同的健康信念也會發揮不同的影響。

伍、結論與建議

一、結論

根據研究結果，得出以下結論：

研究對象隱形鏡保健知識屬中上水平，平均答對率為73.7%，其隱形眼鏡保健健康信念中「使用隱形眼鏡導致眼部不適的罹患性自覺」、「使用隱形眼鏡導致眼部不適的嚴重性自覺」、「隱形眼鏡保健行為有效性自覺」均屬中上的程度；「隱形眼鏡保健行為障礙性自覺」屬中間的程度；然而，研究亦發現隱形眼鏡保健行動線索屬中等偏少的程度。

在執行隱形眼鏡保健的行為方面，屬中上的程度，研究對象的背景變項中只有「隱形眼鏡保健知識」與「隱形眼鏡保健行為」呈低程度的顯著正相關；而健康信念中「使用隱形眼鏡導致眼部不適的罹患性自覺」、「使用隱形眼鏡導致眼部不適的嚴重性自覺」、「隱形眼鏡保健行為有效性自覺」三者與「隱形眼鏡保健行為」呈低程度的顯著正相關。

研究對象的背景變項、隱形眼鏡保健健康信念、隱形眼鏡健康行動線索可以有效的預測「隱形眼鏡保健行為」，並可解釋其總變異量的13.2%；其中在所有的預測變項相互控制之下，研究對象就讀理工類學院者、隱形眼鏡保健知識越好者、自覺隱形眼鏡保健行為有效性越高者，其採取的隱形眼鏡保健行為越佳。

二、建議

(一)對教育單位的建議

隱形眼鏡保健知識是本研究當中較有效的預測因子而且屬於可介入的變項，因此建議教育單位在中學、大學的健康促進教材中，加入隱形眼鏡保健的內容。在學校健康推廣方面，建議定期由校醫或校護在舉辦

講座，透過增強其保健知識，從而使執行正確的隱形眼鏡保健行為。

(二)對衛生當局的建議

從本研究結果可見，「隱形眼鏡保健行動線索」屬中下程度，當中研究對象表示較難在購買隱形眼鏡的地方，以及從網上平台獲得相關資訊。因此，衛生當局應考慮盡可能增加提供隱形眼鏡保健資訊的途徑，考慮增加網上健康推廣的途徑，如利用facebook、Instagram、微訊公眾號等平台，增加對隱形眼鏡保健的資訊，製作圖文包或小遊戲等加強推廣效果。

(三)對未來研究的建議

在文獻回顧過程中，發現國內關於隱形眼鏡保健行為的研究並不多，當中關於大學生的研究更尤其缺乏。而由於本研究的經費、人力以及時間的限制，只選取了澳門某大學的大學生作為研究樣本，故研究結果較難以推至其他地區的大學生適用。未來可以考慮擴大其他的學生人群，包括：研究生、博士生等的相關調查。

同時，本研究對隱形眼鏡保健行為的解釋力僅有13.2%，未來仍有更多的改善空間，建議未來可加入其他的變項，如自我效能等，或採用其他的健康促進模式去解釋。

三、研究限制

(一)本研究是橫斷式調查研究，只能對研究期間的相關因素作簡單的比較性或相關性分析，但無法作出因果方面的推斷；

(二)本研究僅以澳門某大學的大學生作為母群體，因此研究結果只能用作推論澳門地區的大學生，無法推論其他地區的高校；

(三)本研究採取紙本及電子問卷收集法進行資料收集，部分作答屬回憶性作答，容易出現回憶性偏差；而兩種不同收集方式可能會影響樣本代表性的問題；

(四)現時國內有關大學生配戴隱形眼鏡的研究不多，而且甚少有使用健康信念模式去作探討，因此，本研究較多是參考國外的文獻。可能會造成研究對象的局限性及偏倚。

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Research on Contact Lens Health Care Behavior and Related Factors of Students in a University in Macao — An Application of Health Belief Model

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Abstract

Objective: To investigate the contact lens health care behavior and related factors of college students in Macao with Health Belief Model.

Methods: Self-structured questionnaire was developed based on literature review. Taking the college students in 2021-2022 of a university in Macao as the population, stratified random sampling method was used. 509 questionnaires were sent out, and 397 were received and the response rate was 78.0%.

Results: Contact lens health care behavior of participants was belonged to the above-average level, while contact lens knowledge score, perceived susceptibility, perceived severity and perceived effectiveness are related to the contact lens care behavior. When predicting "contact lens care behavior" from background variables, contact lens care health beliefs and contact lens health action clues, 13.2% of the total variation can be explained with the multiple regression. Under the interactive control of all predictive change, participants who studied in in college of science and engineering, the higher contact lens care knowledge score, the higher

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"Perceived effectiveness of contact lens health care behavior", the better correct contact lens care behavior to adopt.

Recommendation: More health promotion methods should be encouraged, and contact lens care health promotion should be included in the text book in the middle school and university education.

Key Words: Macao, college students, contact lens care, health belief model

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探討COVID-19後疫情時代護理、長照與公衛相關科系學生投入長照產業意圖之影響因素

洪慈慧* 廖容瑜**

摘要

人口快速老化導致國內的長照產業需求大幅增加。然全球受到新冠肺炎的威脅，可能影響國內長照產業投入意願，因此了解相關科系學生投入長照產業有助於未來長照產業人才之投入。本研究運用計畫行為理論，探討後疫情時代就讀護理、長期照護及公共衛生等相關健康產業科系的學生投入長照產業意圖的影響因素。採線上問卷調查，將問卷連結張貼於社群平台，並說明研究對象之條件等細節，最後符合研究對象納入條件之樣本數共計153份，以SPSS 23.0版套裝軟體進行變異數分析、t檢定、皮爾遜相關分析、多元階層迴歸分析等。而多元階層迴歸分析的結果顯示，影響後疫情時代健康產業相關科系的學生投入長照產業意圖之因素包含「男性」($\beta = -0.142$, $p < .05$)、「對於投入長照產業工作態度」($\beta = 0.481$, $p < .001$)、「主觀規範」($\beta = 0.225$,

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$p < .001$) 及「知覺行為控制」($\beta = 0.214$, $p < .01$)。本研究發現，對於投入長照產業抱持正向的態度，提升重要他人的支持與勝任感，將增強投入長照產業之意圖。因此，建議健康產業科系之教育單位推動在地化產學合作，增加長照單位之參訪、見習或實習機會，以及增設高齡與長照相關通識課程或學分學程，強化學生對在地長照產業的認同，消除刻板印象或偏見，有助於長照產業人力的發展。

關鍵詞：老化知識、同理心、投入長照產業意圖、計畫行為理論、對於長照或老化看法

壹、前言

我國的人口老化速度較其他亞洲國家快（內政部，2018），依據我國「老人福利法」(2020) 之修訂，凡年滿65歲以上即為長者。本研究所指之長期照顧係以「長期照顧服務法」第三條第一款 (2021) 之定義，身心失能持續已達或預期達六個月以上者，並依其個人或其照顧者之需要，提供生活支持、協助、社會參與、照顧及相關醫護服務，其工作範疇包含居住型照顧服務業、社會工作服務業與家事服務業等（經濟部智慧財產局，2021）。由老人福利服務專業人員資格及訓練辦法 (2017) 顯示，凡領有照顧服務員訓練結業證明書、照顧服務員技術士證、畢業於高中（職）以上學校護理、照顧相關科（組）者，年滿十八歲即可考照並就業。

國家發展委員會 (2022) 報告指出，我國於2018年為高齡社會，2022年長者占總人口比率為17.5%，推估2025年將正式跨入超高齡社會，意即每五人就有一位是65歲以上的長者。世界衛生組織推估全球於2025年長照產業的經濟價值高達台幣1千122兆元，成為未來最具潛能的產業之一，此數據揭露長者將成為未來臺灣消費的主力族群之一，尤其是對長期照顧領域而言，將帶來龐大的商機與人力需求（國家衛生研究院，2020）。然全球受到嚴重特殊傳染性肺炎 (Coronavirus Disease-2019, COVID-19) 的威脅，隨著病原體不斷地演化，疫情反覆襲擊，對於長者之生、心理健康造成很大的傷害，健康照護人員承載許多的工作壓力與工作負荷量，因而產生過勞或職業倦怠 (professional burnout) 的結果（謝淑慧，2020；Lai et al., 2020），同時必須承擔因提供照護而被傳染之風險，而感到恐懼、擔憂或不安（謝淑慧，2020；Al Thobaity & Alshammari, 2020；Kheirandish et al., 2020），使其增加離職的意圖。由此可見，人口結構老化與減緩長照產業的人力流失是我國亟需重視的議題。

由於長照產業不同於一般服務業之產品及服務，具有高度特殊性需求，目前在長者照護工作中，多以護理人員為主（衛生福利部〔衛福部〕，2018）。儘管政府或社會福利體系已積極推動各項社會福利措施，但對於健康、亞健康及未符合社福體系補助的長者而言，滿足照護需求的程度仍相對較低，甚至有更多需求未被滿足（張慈映，2015），再加上獨居 (8.97%) 或老老照顧 (20.38%) 已成為國內長者居住的新趨勢（衛福部，2018），獨居的生活需要更多輔具、設施或科技等資源的介入，故長期照護、公共衛生等健康產業相關科系（含醫務管理系或健康事業管理系）之人才，得以發揮所長，規劃並執行長者之慢性病管理及生活育樂等健康照護計畫，提供適切且多元的長照服務，使其獲得安全、便利及獨立自主之生活，滿足長者的內在、社會服務以及醫療需求（張慈映，2015），並維持亞健康之長者身心健康、延緩老化、預防失能及減少未來臥床的時間。

根據Ajzen (1991) 計畫行為理論模式推斷，當個體對於投入長照產業感到有興趣或抱持正向態度時，會受到老化知識程度、情感、同理心、過去經驗、重要他人支持、成就感或風險感知的影響，開始進行決策評估，進而增強或抑制投入長照產業意圖。研究顯示，老化知識程度和對於長者或老化看法均與個體的年齡 (Alquwez et al., 2018; Fita et al., 2021; Kabátová et al., 2016)、教育程度 (Fita et al., 2021; Kabátová et al., 2016; Rababa et al., 2021)、修習長照相關課程（李芳瑀、謝佳容，2013；Alqahtani et al., 2022；Jester et al., 2021；Rababa et al., 2021）、與長者同住 (Alquwez et al., 2018; Fita et al., 2021)、長者志工服務經驗（侯佳惠，2017；趙堡蕓等，2018；Alquwez et al., 2018；Neville & Dickie, 2014）或具有長照工作經驗者 (Fita et al., 2021; Kabátová et al., 2016; Neville & Dickie, 2014) 等因素有關。此外，女性（李芳瑀、謝佳容，2013；Fita et al., 2021；Neville & Dickie, 2014）、就讀健康產業相關科系 (Jester et al., 2021)、生活於傳統文化背景或大家庭 (Alquwez

et al., 2018; Neville & Dickie, 2014; Xiao et al., 2013) 及社經地位（劉欣宜，2015）等亦影響個體對於長者或老化的看法。

另一方面，同理心亦是健康照護人員之基本技能 (Kiersma et al., 2013)，是照護關係中不可或缺的組成要素 (Gholamzadeh et al., 2018; Kim et al., 2021; Podhorecka et al., 2022)，更有助於增進從業人員投入長照產業工作的意圖 (Kim et al., 2021; Johnson et al., 2018)。

然而，在疫情爆發期間，多數人對於老化抱持負向的看法，長者被視為高風險感染者 (Alkhaldi et al., 2021; Papadopoulos et al., 2021; Perrotta et al., 2020)，無形中造成代間的互動關係更加惡化。研究顯示，對於COVID-19的風險感知程度越高的健康照護人員，將更抗拒與潛在感染風險者有所互動，不僅對於長照或老化的看法抱持負向或消極的態度 (Zeng et al., 2022)，對於從事助人工作之意圖亦隨之降低 (Kantorski et al., 2022; Khattak et al., 2021; Tolksdorf et al., 2022; Wünsch et al., 2022)。

因此，本研究將以臨床照護及提供長期照護多元服務之健康產業相關科系的學生作為研究對象，運用計畫行為理論，瞭解學生在經歷全球肆虐的疫情威脅後，未來投入長照產業意圖之情形，並運用多元階層迴歸分析，預測後疫情時代的研究對象投入長照產業意圖之影響因素，此方法是基於理論與本研究目的為優先考量，變項間的關係安排，主要是依照理論基礎的先後順序或文獻資料，進行推演與分析，逐步檢驗預測變項對於投入長照產業意圖之解釋力。期望透過本文讓國人及學生家長正視邁進超高齡化社會之趨勢，並激勵相關科系學生將所學的照護知識與技能，投入長照產業或高齡社區中，以增加國內長照產業的人力。此外，本研究結果亦可補足過去相關學術研究的不足，提供相關資料供國內長照產業界之領導者參考。

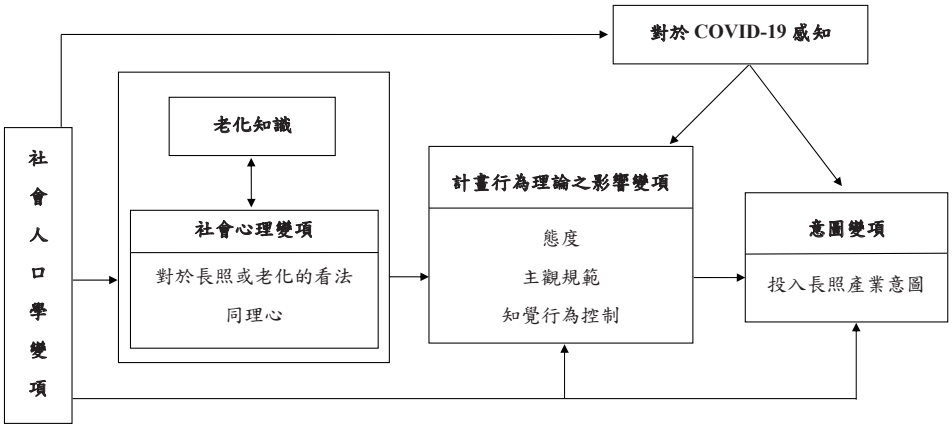
貳、材料與方法

一、研究設計

本研究採用「橫斷性研究設計」，並以計畫行為理論 (Ajzen, 1991) 為基礎以提出研究假設（如圖1）。將老化知識、對於長照或老化看法、觀點取替、同理關懷、設身處地、對於COVID-19感知及計畫行為理論之態度、主觀規範、知覺行為控制等變項，定義為自變項，投入長照產業意圖則為依變項。

圖1

研究架構圖



二、研究對象

本研究以就讀護理系、長期照護系、公共衛生系（含醫務管理系或健康事業管理系）等健康產業相關科系之年滿20歲以上的大三、大四生（含延畢）及研究生為調查對象。本研究抽樣方式採立意抽樣方法進行調查，

然為了維護研究對象的隱私與降低個資外洩之風險，主要以線上方式招募自願參加者，於研究者之社群媒體 (FACEBOOK、LINE) 上發布召募訊息，並說明研究對象之條件等細節，有意願者連結至電子表單問卷進行線上匿名式填答，執行過程中不與研究對象直接接觸互動，亦無取得研究對象之個人資料與聯繫方式，故無收集參與者簽署同意書。本研究經國立臺灣師範大學研究倫理審查委員會之研究審查通過後開始執行（編號為202302HS014）。調查時間為2023年3月1日至3月31日，符合本研究對象條件之問卷，納入分析個案數，共計153份。

三、研究工具

本研究工具主要參考相關文獻之量表，為了符合本研究目的與架構，將量表題目翻譯為適合本研究主題之詞句，委請一位老年醫學科醫師，四位老人學的學者進行專家效度檢定，經預試後，建構成自編結構式問卷。正式問卷內容包含社會人口學變項、老化知識、對於長照或老化看法、同理心、對於COVID-19感知以及投入長照產業的計畫行為理論等量表，其中對於長照或老化看法量表、同理心量表、對於COVID-19感知量表以及投入長照產業的計畫行為理論量表，主要以李克特氏 (Likert Scale) 五點量表計分，其作答選項為「非常不同意」（1分）、「不同意」（2分）、「普通」（3分）、「同意」（4分）、「非常同意」（5分）。

（一）社會人口學變項：

包含性別、戶籍地區、就讀科系、目前就讀年級、年齡、家庭型態、父母親教育程度、家庭每月總收入、過去是否有從事長照相關工作經驗、過去是否有參與關懷老人相關活動及志工經驗、家人是否從事長照相關工作等。

（二）老化知識量表：

參考2015年Breytspraak和Badura之「修訂版老化事實測驗量表

(Facts on Aging Quiz)」，調查研究對象在各種情況下，對於老化的知識和偏見程度，然依據相關文獻與研究目的，同時考量填答所需時間，經專家效度檢定並預試後，建構成自編結構式問卷，共計12題。其作答選項為「正確」、「錯誤」或「不知道」，每題1分，答錯或填答不知道者，該題得0分。此量表經正式施測之Cronbach's α係數為0.64。

（三）對於長照或老化看法量表：

意指對於65歲以上長者的認知及對老化的過程，產生正、負面的態度評價或看法。參考Kelly等人 (2020) 之研究團隊所發展「對於長者或老化的態度量表 (Geriatrics Attitudes Scale, GAS)」編製，共計7題，英文詞語翻譯為適合本研究主題之詞語。此量表經正式施測之Cronbach's α係數為0.63。

（四）同理心量表：

參考鄭榮峰等人 (2011) 之中文版「傑佛遜同理心量表 (Jefferson Scale of Empathy)」編製，共計9題，包含觀點取替（5題）、同理關懷（2題）與設身處地（2題）等三個變項。經正式施測後，此量表之各變項的Cronbach's α係數介於0.65 ～ 0.84。

（五）對於COVID-19感知量表：

意指在COVID-19大流行期間，研究對象因病毒或疾病對於健康、經濟和社會產生不利影響，而感受到不適或憂慮的程度。參考Mahmoud等人 (2022) 之研究量表編製，共計2題。此量表經正式施測之Cronbach's α係數為0.58。

（六）投入長照產業的計畫行為理論量表：

意指從事長期照顧產業範疇工作之傾向或意圖。參考Kirsten等人 (2020) 之研究量表編製，用以調查研究對象未來投入長照產業意圖，包含對於投入長照產業工作態度、主觀規範、知覺行為控制與投入長照產

業意圖等變項。為了符合本研究對象特性，最後修訂共計12題。經正式施測後，總量表之Cronbach's α值為0.92，而各變項之Cronbach's α值皆大於0.8以上（對於投入長照產業工作態度α = 0.81；主觀規範α = 0.94；知覺行為控制α = 0.91；投入長照產業意圖α = 0.94）；效度分析採因素分析，其因素負荷量皆為0.5以上，解釋變異量為61.44%至90.06%之間。

四、資料處理與分析

本研究以SPSS 23.0進行分析。使用描述性統計分析社會人口學變項、老化知識、對於長照或老化看法、同理心、對於COVID-19感知及投入長照產業意圖等量表之分布情形，並以平均值、標準差、百分比來說明結果。使用單因子變異數分析 (One-Way Analysis of Variance, ANOVA) 及t檢定檢驗社會人口學變項各組之間的平均數是否有顯著差異。以皮爾遜相關分析 (Pearson Correlation Analysis) 檢定各變項與投入長照產業意圖之間是否有線性關係。最後，以多元階層迴歸分析 (Hierarchical Multiple Regression Analysis) 預測後疫情時代的研究對象投入長照產業意圖之影響因素。

參、研究結果

一、社會人口學變項之分布

本研究對象中，以女性較多 (83.7%)，設籍於中部地區比例最多 (47.1%)，以就讀護理系占多數 (27.5%)，年齡分布以20～30歲 (75.8%) 最多。多數研究對象與父母同住 (58.2%)，父母親教育程度均以高中職學歷為主（分別為44.4%、50.3%），家庭每月總收入以10萬元（含）以上之比例最高。有八成以上的學生曾參與關懷老人或志工服務經驗 (80.4%)，自己 (18.3%) 或家人 (11.1%) 具有長照相關工作經驗的比例較少。

二、主要研究變項之分布

本研究對象之老化知識程度中等，平均得分為7.71分 (*SD* = 2.38)；對於長照或老化看法之平均值為25.59分 (*SD* = 3.50)，顯示研究對象對於長照或老化看法偏正向。同理心之總平均值為35.25分 (*SD* = 4.44)，其中觀點取替變項之平均值為21.52 (*SD* = 2.77)，同理關懷為7.96 (*SD* = 1.64)，設身處地為5.77 (*SD* = 1.91)，顯示本研究之學生能夠站在長者的立場著想，對長者的獨特經歷抱持正向的態度並理解其內心感受；而在疫情大流行期間，感受到不適或憂慮的程度偏高 (*M* = 7.86; *SD* = 1.54)。在投入長照產業的計畫行為理論變項的表現上，總平均得分為38.98 (*SD* = 8.50)，顯示本研究的學生對於投入長照產業工作態度 (*M* = 10.80; *SD* = 2.07) 與知覺行為控制 (*M* = 10.25; *SD* = 2.63) 屬中上程度，自覺工作困難度不高，能夠勝任此工作，但知覺重要他人（如父母、同儕、朋友、師長等）期許或支持自己投入長照產業的程度較低 (*M* = 8.71; *SD* = 2.76)，投入長照產業意圖為中等程度 (*M* = 9.22; *SD* = 3.04)。

三、社會人口學變項對投入長照產業意圖之影響

本研究使用ANOVA與獨立樣本t檢定，比較研究對象之社會人口學變項在各變項之間是否有顯著差異，並經薛費氏事後比較法 (Scheffe's Method) 比較各組之間是否存有差異性（詳見表3）。結果顯示，性別 (*t* = 2.995, *p* = 0.003)、就讀科系 (*F* = 4.681, *p* = 0.001)、年級 (*F* = 4.740, p = 0.010)、年齡層 (*F* = 3.163, *p* = 0.045)、學生的父親教育程度 (*F* = 7.570, *p* < .001) 以及長照相關工作經驗 (*F* = 5.383, *p* < .001) 與投入長照產業意圖有顯著相關。

四、主要研究變項與投入長照產業意圖的相關

由皮爾遜相關分析結果顯示（詳見表4），對於長照或老化看法、觀點取替、同理關懷、設身處地、對於投入長照產業工作態度、主觀規範以

及知覺行為控制，均與投入長照產業意圖達顯著水準，其相關係數依序為0.260、0.252、0.170、0.200、0.704、0.575、0.623，皆呈顯著正相關，表示當學生對於長照產業或老化抱持正向看法，能夠設身處地地站在長者立場並予以關懷，同時知覺重要他人的支持以及良好的工作勝任感，其投入長照產業之意圖越高。而在計畫行為理論之影響變項中，老化知識、對於長照或老化看法、觀點取替、同理關懷以及設身處地與對於投入長照產業工作態度達顯著水準，其相關係數依序為0.262、0.486、0.398、0.380、0.236；對於投入長照產業工作態度與主觀規範呈顯著正相關，其係數為0.381；對於長照或老化看法、觀點取替與知覺行為控制達顯著水準，其係數分別為0.174、0.248。以上均為正相關。

表1

社會人口學變項之分布情形 (*N = 153*)

變項名稱	人數	百分比 (%)
性別：男	25	16.3
女	128	83.7
戶籍地區：北部地區	63	41.2
中部地區	72	47.1
南部／東部／福建省	18	11.8
就讀科系：護理系	42	27.5
長期照護系	39	25.5
公共衛生系（含衛教系）	32	20.9
醫務管理系／健康事業管理系	28	18.3
其他健康照護相關科系	12	7.8
目前就讀年級：大三	65	42.5
大四（含延畢生）	31	20.3
研究所	57	37.3
年齡層：20～30歲	116	75.8

（續下表）

表1 （續）

變項名稱	人數	百分比 (%)
31 ～ 40歲	21	13.7
41歲以上	16	10.5
家庭型態：三代同堂	31	20.3
與父母同住	89	58.2
其他	33	21.6
父親教育程度：國中（含）以下	27	17.6
高中職	68	44.4
大學	44	28.8
碩士（含）以上	12	7.8
不清楚	2	1.3
母親教育程度：國中（含）以下	25	16.3
高中職	77	50.3
大學	38	24.8
碩士（含）以上	11	7.2
不清楚	2	1.3
家庭每月總收入：20,000元（含）以下	5	3.3
20,001 ～ 50,000元	35	22.9
50,001 ～ 70,000元	34	22.2
70,001 ～ 100,000元	30	19.6
100,001元（含）以上	49	32.0
過去從事長照相關工作經驗：是	28	18.3
否	125	81.7
過去參與關懷老人相關活動及志工經驗：是	123	80.4
否	30	19.6
家人從事長照相關工作：是	17	11.1
否	136	88.9

表2

研究變項之平均值與標準差摘要表 (*N = 153*)

變項名稱	平均值 (*M*)	標準差 (*SD*)	最小值 (*Min*)	最大值 (*Max*)	中位數 (*Md*)
老化知識	7.71	2.38	2	12	8
對於長照或老化看法	25.59	3.50	11	34	26
同理心	35.25	4.44	24	45	35
觀點取替	21.52	2.77	13	25	22
同理關懷	7.96	1.64	2	10	8
設身處地	5.77	1.91	2	10	6
對於COVID-19感知	7.86	1.54	2	10	8
投入長照產業的計畫行為理論	38.98	8.50	15	60	39
對於投入長照產業工作態度	10.80	2.07	4	15	11
主觀規範	8.71	2.76	3	15	9
知覺行為控制	10.25	2.63	3	15	10
投入長照產業意圖	9.22	3.04	3	15	9

五、各變項與投入長照產業意圖之影響

首先，將社會人口學變項投入第一階層之迴歸模式中（詳見表5），發現只有性別 (β = -0.197, t = -2.551, p < .05)、年級 (β = 0.235, t = 2.873, p < .05)、父親教育程度 (β = -0.222, t = -2.162, p < .05; β = -0.375, t = -3.835, p < .001) 及過去是否有長照相關工作經驗 (β = 0.267, t = 3.521, p < .01) 達顯著水準。

接續，再將老化知識、對於長照或老化看法、觀點取替、同理關懷、設身處地及對於COVID-19感知等變項投入第二階層之模型中，結果顯示，性別 (β = -0.163, t = -2.097, p < .05)、年級 (β = 0.224, t = 2.710, p < .01) 、年齡層 (β = 0.218, t = 2.210, p < .05)、父親教育程度 (β = -0.212, t = -2.074, p < .05; β = -0.372, t = -3.836, p < .001)、過去是否有長照

相關工作經驗 (β = 0.239, t = 2.993, p< .01)、對於長照或老化看法 (β = 0.195, t = 2.178, p < .05) 及觀點取替 (β = 0.172, t = 2.082, p < .01) 等變項具有顯著的預測力。

最後，將對於投入長照產業工作態度、主觀規範及知覺行為控制變項投入第三階層之模式中，整體解釋力為69.4%，以性別 (β = -0.142, t = -2.540, p < .05)、對於投入長照產業工作態度 (β = 0.481, t = 6.641, p < .001)、主觀規範 (β = 0.225, t = 3.674, p < .001) 及知覺行為控制 (β = 0.214, t = 3.162, p < .01) 對於投入長照產業意圖具有顯著預測力，其中「性別」之調整後標準化係數β為-0.142，表示男性之投入長照產業意圖比女性顯著。

表3

社會人口學變項在投入長照產業的計畫行為理論之差異摘要表 (N = 153)

	變項	平均值 (*M*)	標準差 (*SD*)	*F*	*p*
性別	男性	10.84	3.08	2.995**	0.003
	女性	8.90	2.94		
戶籍地區	北部地區	8.73	2.95	1.618	0.202
	中部地區	9.67	3.16		
	其他	9.11	2.76		
就讀科系	護理系	9.17	2.96	4.681**	0.001
	長期照護系	10.82	2.86		
	公共衛生系（含衛教系）	8.63	3.34		
	醫管系／健管系	8.00	2.48		
	其他	8.58	2.43		
年級	大三	8.78	2.52	4.740*	0.010
	大四（含延畢）	10.68	3.57		
	研究所	8.91	3.09		

（續下表）

表3 （續）

變項		平均值 (*M*)	標準差 (*SD*)	*F*	*p*
年齡層	30歲(含)以下	9.01	2.89	3.163*	0.045
	31 ～ 40歲	9.00	3.95		
	41歲(含)以上	11.00	2.25		
家庭型態	三代同堂	9.16	3.09	2.261	0.108
	與父母同住	8.88	2.85		
	其他	10.18	3.38		
父親教育程度	國中(含)以下	10.89	2.62	7.570***	< .001
	高中職	8.99	3.06		
	大學	9.36	2.62		
	碩士(含)以上	6.25	2.99		
母親教育程度	國中(含)以下	9.76	3.09	1.013	0.389
	高中職	9.10	3.06		
	大學	9.39	3.04		
	碩士(含)以上	7.91	2.98		
家庭每月總收入	2萬元(含)以下	9.60	1.34	2.574*	0.040
	20001 ～ 50000元	8.66	2.86		
	50001 ～ 70000元	10.29	2.26		
	70001 ～ 10萬	9.83	2.59		
	100,001元(含)以上	8.45	3.73		
從事長照工作經驗	是	11.79	2.91	5.383***	< .001
	否	8.64	2.77		
參與老人及志工經驗	是	9.45	2.99	1.923	0.056
	否	8.27	3.13		
家人從事長照相關工作	是	10.29	2.62	1.558	0.121
	否	9.08	3.07		

表4

研究變項之相關分析摘要表 (N = 153)

變項	A	B	C	D	E	F	G	H	I	J
A 老化知識	1	0.424***	0.219**	0.405***	0.186*	-0.049	0.262**	-0.039	0.086	0.094
B 對於長照或老化看法		1	0.342***	0.478***	0.295***	-0.042	0.486***	0.104	0.174*	0.260**
C 觀點取替			1	0.474***	0.036	0.057	0.398***	0.099	0.248**	0.252**
D 同理關懷				1	0.152	-0.052	0.380***	-0.094	0.130	0.170*
E 設身處地					1	0.012	0.236**	0.042	0.158	0.200*
F 對於 COVID-19 感知						1	-0.149	-0.085	-0.034	-0.086
G 對於投入長照產業工作態度							1	0.381***	0.456***	0.704***
H 主觀規範								1	0.433***	0.575***
I 知覺行為控制									1	0.623***
J 投入長照產業意圖										1

* $p < .05$ ** $p < .01$ *** $p < .001$

表5

投入長照產業意圖之多元迴歸分析摘要表 (N = 153)

自變項／控制變項	模式1		模式2		模式3	
	β	*t* 值	β	*t* 值	β	*t* 值
性別：男性 (*ref*)						
女性	-0.197	-2.551*	-0.163	-2.097*	-0.142	-2.540*
年級：大三 (*ref*)						
大四（含延畢）	0.235	2.873**	0.224	2.710**	0.103	1.733
研究所	0.005	0.049	-0.059	-0.532	-0.022	-0.283

（續下表）

表5 （續）

自變項／控制變項	模式1		模式2		模式3	
	β	*t*值	β	*t*值	β	*t*值
年齡層：30歲（含）以下 (*ref*)						
31~40歲	-0.016	-0.179	0.002	0.024	0.009	0.140
41歲以上	0.163	1.662	0.218	2.210*	0.049	0.682
父親教育程度：						
國中（含）以下 (*ref*)						
高中職	-0.222	-2.162*	-0.212	-2.074*	0.009	0.120
大學	-0.220	-1.863	-0.203	-1.745	-0.009	-0.112
碩士（含）以上	-0.375	-3.835***	-0.372	-3.836***	-0.126	-1.735
過去長照相關工作經驗：						
否 (*ref*)						
是	0.267	3.521**	0.239	2.993**	0.082	1.394
老化知識			-0.002	-0.026	-0.050	-0.839
對於長照或老化看法			0.195	2.178*	-0.023	-0.340
觀點取替			0.172	2.082**	-0.048	-0.785
同理關懷			-0.128	-1.406	-0.003	-0.037
設身處地			0.002	0.028	0.022	0.406
對於COVID-19感知			-0.011	-0.159	0.042	0.852
對於投入長照產業工作態度					0.481	6.641***
主觀規範					0.225	3.674***
知覺行為控制					0.214	3.162**
*F*值	4.126***		3.883***		10.634***	
調整後 R^2	0.353		0.382		0.694	

註：ref代表參考組。

將戶籍地區、就讀科系、家庭型態、母親教育程度、家庭每月總收入、過去是否有參與關懷老人相關活動及志工經驗、家人是否從事長照相關工作等變項納入分析，但因未達顯著水準，故無呈現於表格中。

* p < .05 **p < .01 *** p < .001

肆、討論與建議

本研究結果顯示，多數學生對於長者或老化傾向於正向的看法，此與文獻結果相同（劉欣宜，2015；Ghimire et al., 2019；Milutinovi et al., 2015）。然COVID-19疫情確實對本研究之學生的健康或生活，造成巨大的威脅及影響，其結果與Borges 和 Byrne (2022) 之研究相似。

此外，本研究學生的「性別」、「就讀科系」、「年級」、「年齡層」、「父親教育程度」、「過去是否從事長照相關工作經驗」可能影響投入長照產業意圖。而對於投入長照產業工作的態度會因「性別」、「年級」、「父親教育程度」、「過去是否有長照相關工作經驗」及「是否有參與關懷老人相關活動經驗」的不同而有顯著差異。主觀規範則受到「就讀科系」、「父親教育程度」與「過去是否從事長照相關工作經驗」的影響；而不同的「戶籍地區」、「就讀科系」、「父親教育程度」、「過去是否從事長照相關工作經驗」與「過去是否參與關懷老人相關活動及志工經驗」將影響知覺行為控制。由此可見，年級或年齡 (Jang et al., 2019; McKrnzie & Brown, 2014)、重要他人支持（趙堡蕓等，2018；Garbrah et al., 2021）以及科系認同感（盧品涵，2021）都會影響學生投入長照產業工作的態度與職業意圖，此與多數研究結果一致。然而，由文獻顯示，從事照顧服務員之相關工作與是否具備大學學歷並無直接關係，故可推測本研究對象中，有少數學生可能於高中（職）畢業後，暫且中斷求學之路，經工作多年後，透過大學招生入學管道，持續進修，其年齡可能高於一般生，因而影響職業意圖。

綜合上述結果，發現父親教育程度是一重要變項，推測可能與學生的家庭社會資本有關，Zhang等人 (2020) 與 Sharma (2014) 的研究結果發現家庭社會資本與職業意圖具有顯著影響，亦符合Blau和Duncan (1967) 所提出的「地位取得模式 (Status Attainment Model)」理論，表示父親的角色對於本研究之學生的成長相當重要，父親教育程度能夠直接反映出家庭的文化背景，並從其職業間接反映家庭的社會地位與教育方式，塑

造學生的職業或工作價值觀，使其影響未來職涯的規劃 (Chen & Chen, 2018)。而多數文獻（林怡萱等，2021；Jang et al., 2019；Zhang et al., 2016）亦指出，工作經驗、志工經驗或實習將有助於學生對於該產業工作抱持正向的態度，同時掌握更多的資源與機會，使其知覺到工作阻礙較低，並獲得勝任感，未來留在產業的意圖會較為強烈。

學生的老化知識與對於長照或老化看法存在顯著相關，這與文獻結果相同 (Ghimire et al., 2019; Milutinovi et al., 2015)，且老化知識與從事長照的工作態度亦呈正相關，結果同於Cheng (2021) 之研究。對於長照或老化之看法、同理心與未來從事長照產業工作的態度和職業意圖，彼此具有正相關，結果與多數研究一致 (Gholamzadeh et al., 2018; Kim et al., 2021; Johnson et al., 2018; Rathnayake et al., 2016; Zhang et al., 2022; Zhang et al., 2016)。

由模式中得知，影響學生未來畢業後投入長照產業工作意圖之因素包含「男性」、「對於長照產業工作態度」、「主觀規範」及「知覺行為控制」。此外，由分析過程的改變，發現若單純以學生的老化知識得分、對於長照或老化看法、觀點取替、同理關懷、設身處地、對於COVID-19感知等變項，分析未來畢業後的投入長照產業意圖之相關性，其「對於長照或老化看法」與「觀點取替」具有顯著的影響力，但當模型加入計畫行為理論之影響變項後，學生對於長照或老化看法卻轉為不顯著。透過文獻回顧可得知，長照產業工作主要以女性為第一線的照護提供者居多 (Harling et al., 2020; Yakubu et al., 2022)，工作範疇以照顧服務員為主，但長照產業是一項需要多元且專業的健康照護人才共同提供服務之工作領域，經營管理人員亦是產業重要角色之一，可推測本研究之男學生可能較傾向於經營管理層面之工作項目。同時，映照出重要他人的支持程度與自覺在長照工作機構中實現職業發展情形皆是預測學生投入長照工作意圖的重要因素，這與當前研究結果一致 (Chen et al., 2021)。然本研究之老化知識、對於長照或老化看法、同理心以及對於COVID-19感知程度，均不影

響後疫情時代的學生投入長照產業之意圖，這點與國外文獻結果不一致(De los Santos & Labrague, 2021; Khattak et al., 2021; Kim et al., 2021; Johnson et al., 2018; Tolksdorf et al., 2022)，除了樣本屬性的差異之外，可能還存在其他影響因素，包含薪資待遇(張淑敏，2021；蔡榮發等，2022；賴亭君等，2018)、派案的公平性與合理性、工時、工作穩定性、工作環境友善度、勝任感或照護服務的肯定(包含與長者及其家屬的情感連結)(陳妤謙等，2022；張淑敏，2021；曾宗彥、施 紅，2023；詹麗珠等，2022；蔡淑鳳等，2013；蔡榮發等，2022；賴亭君等，2018；謝美娥，2017)、教育訓練與福利措施(陳振盛、謝振裕，2017)、職業角色與低社會聲望(蔡淑鳳等，2013；謝美娥，2017)及職涯發展(林怡萱等，2021；鄭鈞元，2022)等，均是影響學生投入長照產業的意圖之因素，由於目前人口結構改變，讓長照產業前景是被期待之下，相關的薪資待遇、機會、能力培訓、資源或政策等都可能有所不同，因此值得更多的研究持續關注這一議題。

儘管本研究對象對於COVID-19的感知程度偏高，但結果並不顯著，透過文獻回顧與國際COVID-19疫情曲線得知，臺灣相較於歐美或其他亞洲國家，疫情嚴重度較低，彰顯出國人具備防疫觀念，在政府制定的防疫措施下，能有效抵抗COVID-19病毒的威脅。雖然長照機構之服務對象是易感染族群之一 (Alkhaldi et al., 2021; Papadopoulos et al., 2021; Perrotta et al., 2020)，但由於臺灣防疫政策完善且多數都已有施打疫苗，因此對於COVID-19的感知程度並不影響學生投入長照產業的意圖。

本研究為橫斷性資料探討健康產業科系之學生畢業後投入長照產業之意圖，依時間面向而言，係屬於「以一次調查為限」之研究方式，因此所得結果較缺乏時間軸的比較性，難以顯示學生在發展過程中的差異，甚至較難推斷彼此間的因果關係，為本研究限制一。本研究礙於研究人口的可接近性，並未全面且廣泛地調查國內所有相關科系之學生，故研究結果可能難以推論至其它學生或族群之職業意圖。此外，本研究僅透

過網路問卷調查且採匿名之形式，故無法確切掌握受測者之真實身分及填答的正確性，可能造成推論偏誤，為本研究限制二。

由於「對於COVID-19感知」是一個新穎且抽象的概念，故經文獻回顧後，參考學者所發展的量表，但經正式施測後發現，其信度僅為可接受的臨界值，顯示國外量表應用於國內研究的適用性仍有待進一步作修正，再加上傳染病可能受到特定時間內之致死率、發生率及傳播速度的影響，使其感受到疾病嚴重性或對自身健康威脅程度有所差異，為本研究限制三。

本研究建議國內健康產業相關科系能夠規畫並調整其課程架構，建議增設長照學實習為必修／選修課程，並與地方、社區照顧關懷據點或在地長照中心服務單位合作，辦理長照機構參訪或見習的活動，並提供社區或居家照顧訓練。透過體驗式學習，使學生獲得照護知識及技能，培養助人工作者應有的特質，同時增進學生對在地長照產業的認同，促進在地就業。此外，學生對於老化之認知通常只從「生理」層面著眼，在認知不足之狀態下，對於「老化」及「長照」等名詞易抱持負向的刻板印象，家長對於就讀長照系或從事長照產業工作之支持度亦略顯薄弱。然長照產業之工作角色並非只有照顧服務員，亦包含管理型人才。智慧醫療更是未來長照產業跨界整合的運作模式（徐業良，2020；曾崧華，2023），需要長照、醫學工程、設計、環境等不同專業領域的人才共同投入與合作，故建議大學通識課程增設長照或老化相關課程，促進學生對長者健康的認識，以因應未來高齡社會的轉型人力需求。

針對未來研究方向，建議後續研究者可採行混合性研究設計，透過質性研究訪談後疫情時代的學生對於長者或老化之真實看法與感受，以發掘其影響投入長照產業工作的問題之真正原因。同時，採縱貫性研究設計，追蹤後續參與者畢業後的實際就業選擇，並探討研究對象在不同的年齡、文化背景之間或整體外在環境之變遷下，其職涯發展是否有所差異，以推論各變項間之因果關係。然長期照護服務除了提供健康、醫

療、社會服務之外，亦涵蓋環境改善、提供輔具等跨領域之服務範圍，再加上本研究設籍於南部／東部／福建省之研究樣本數較少，建議後續研究者增加研究樣本數達200人以上，並針對離島或偏鄉地區之設有健康產業科系的大學，進一步增加樣本數，在樣本數較為均等的狀態下，能夠探討不同地區研究對象所接觸的文化背景與知覺工作困難度及職業意圖之間的關係，同時運用結構方程模式探討其他相關科系的學生在不同變項間的關係。

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Influencing Factors on the Intention to Engage in the Long-term Care Industry among College Students with Nursing, Long-term Care and Public Health Majors in the Post-COVID-19 Era

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Abstract

The high speed of the aging population has gradually increased the need of long-term care industry. However, the global threat of the coronavirus disease (COVID-19) may affect the intentions of students in relevant disciplines to enter the long-term care industry. Therefore, understanding the factors that influence students in health-related disciplines, such as nursing, long-term care, and public health, to enter the long-term care industry. It can contribute to the future supply of talent in the field. This was a cross-sectional online survey and 153 participants completed the survey. One-way ANOVA, t-test, Pearson correlation analysis, and multiple hierarchical regression analysis were performed using SPSS 23.0 software. The results of multiple hierarchical regression model revealed that the significant factors included "male" ($\beta = -0.142$, $p < .05$), "attitudes toward the engaging in the long-term care industry" ($\beta = 0.481$, $p < .001$), "subjective norms" ($\beta = 0.225$, $p < .001$) and "perceived behavioral control" ($\beta = 0.214$, $p < .01$).

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The findings support that holding a positive attitude towards entering the long-term care industry and increasing support and self-efficacy from important others will enhance the intention to enter the long-term care industry. It is recommended that educational institutions in health-related disciplines promote local industry-academia collaboration, increase opportunities for visits, internships, and practical training in long-term care units, and establish geriatric and long-term care-related general education courses or credit programs to strengthen students' identification with the local long-term care industry, eliminate stereotypes or prejudices, and contribute to the development of the long-term care workforce.

Key Words: empathy, knowledge of aging, intention to work in long-term care industry, perception toward older people, theory of planned behavior

《健康促進與衛生教育學報》
作者索引

作者	篇名	期數 / 頁碼
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林家妃、張晏蓉	關於智慧型手機的班級使用規範、學生使用態度與成癮風險之相關性	55 / 33-54
全筱曼、劉潔心	國中非健康教育專長教師參與在職進修課程之動機與教學效能之研究	55 / 55-87
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張筱詩、施淑芳	雙親健康行為群聚類別與嬰兒醫療利用之關係	56 / 1-32
鄭嫥嫥	COVID-19 疫苗加強劑接種意願的預測因素：對公共衛生傳播的影響	56 / 33-58
蕭　文、連盈如、張鳳琴	先驅研究－運用設計思考改善高齡者乳品攝取	56 / 59-86
陳文宇、張鳳琴	數位行銷素養教育介入對國中生成效研究	56 / 87-116

《健康促進與衛生教育學報》稿約

112年8月修訂

一、本學報旨在提升健康促進與衛生教育領域之研究，促使學術間交流。採每半年出版一期，於六月、十二月出刊。凡和健康促進與衛生教育相關之學術論文，且未曾投稿於其他雜誌者，均歡迎投稿，惟凡翻譯、一般文獻評述、實務報導等，恕不接受。**本學報不接受紙本與電子郵件(e-mail)投稿，請利用線上投稿系統：**
https://ojs.lib.ntnu.edu.tw/index.php/hphejournal/index。。

二、投遞本學報之論文經編審委員會送請專家學者審查通過後予以刊登，文責由作者自負，來稿以未經任何刊物發表者為限。凡經本刊編輯委員會審查通過予以刊登之著作，其著作財產權即讓與本刊，但作者仍保有著作人格權，並保有本著作未來自行集結出版、教學等個人非營利使用之權利，版權屬於本刊，除商得本刊編輯委員會同意外，不得轉載。

三、來稿以中英文撰寫均可，以英文撰寫之稿件，在正式接受刊登前，編輯部得視需要，請作者提供專業的編譯社編修證明，或經由英文母語人士參與編修並具名編修人姓名及簡歷。每篇含中英文摘要、圖表與參考文獻，中文稿件全文請以不超過一萬五千字為原則；英文以不超過八千字為原則。來稿時應檢附填寫完畢之《健康促進與衛生教育學報申請投稿同意書》電子檔，所有作者皆須親自簽名。上傳系統之稿件本文請勿填寫作者相關資訊，以利審查作業。

四、來稿格式請依以下格式書寫

(一)格式請依據APA第七版，以利審查。

(二)中英文摘要：

包括中英文題目、中英文摘要(撰寫需包含：目標(objectives；研究之重要性、背景)、方法(methods；研究設計、目標族群、

抽樣、資料分析與統計方法）、結果 (results)、結論 (conclusions)）及中英文關鍵詞。論文中文摘要五百字為限、英文摘要三百字以內，並列明至多五個關鍵詞 (key words)，中文依筆劃順序排列、英文依字母順序排列。

（三）內文：

按前言、材料與方法、結果、討論（結論與建議）之次序撰寫，文獻引用請參閱本學報撰寫體例與 APA 第七版。

五、稿件交寄

（一）本學報於 2013 年 1 月起採線上投稿，請登錄「https://ojs.lib.ntnu.edu.tw/index.php/hphejournal/index」線上投稿暨審稿系統，註冊新帳號並填妥基本資料。新增並依頁面填妥投稿所需相關資料，上傳稿件檔案。若為與他人合撰之論文，需指定一人為通訊作者（corresponding author）。

（二）投稿過程如有任何疑問，本刊物編輯委員會聯絡方式：

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六、審稿與校對：

（一）稿件由同儕匿名審委審查通過後，由主編決議是否予以刊載。英文摘要如經編審委員建議請專家修改時，請作者自行接洽修改，並提供編修證明寄回本學報編輯委員會。稿件接受刊登後，作者需配合於中文或外文文獻上加列英文文獻。

（二）論文編輯排版後，請作者負責校正。若有誤請在校稿上改正，於領稿後 48 小時內寄回，若要延長時限請獲編輯委員會許可。

（三）接受刊登之稿件，由本學報贈送通訊作者當期期刊數本（以成功錄稿之當篇作者數為計）。

《健康促進與衛生教育學報》撰寫體例

注意要點

* 請參考 APA 第七版
* 中文皆為全形，英文皆為半形
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* 關鍵字的英文為 key words

壹、內文引註格式

APA 採用姓名－年代的內文引註格式，而不使用文獻編號的書寫方式。

一、1 位作者

中文：劉潔心（2012）的研究發現……

……（劉潔心，2012）

英文：Lee (2011) 的研究發現……

.....(Lee, 2011)

二、2 位作者

中文：陳政友與胡益進（2012）的研究指出……

（陳政友、胡益進，2012）

英文：Globetti 與 Brown (2011) 的研究指出……

..... (Globetti & Brown, 2011)

三、3 位作者（含）以上

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中文：黃淑貞等人（2009）提出……

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英文：Lee等人(2011) 提出……
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四、作者為機構，第一次出現呈現全名，再備註簡稱，第二次之後即可使用簡稱

中文：……（行政院國家科學委員會[國科會]，2008）（第一次引用）
……（國科會，2008）（第二次引用）

英文：..... (National Institute of Mental Health [NIMH], 2011)（第一次引用）
..... (NIMH, 2011)（第二次引用）

五、引用須標出頁數時

中文：……（黃松元，2011，頁37）

英文：..... (Cattan & Tilford, 2006, p. 101)

六、同時引用若干位作者時，中文作者按姓氏筆劃排序，英文作者則依姓名字母排序。同時引用中文與英文作者時，中文作者在前，英文作者在後。

中文：國內一些學者（呂昌明，2006；葉國樑等，2005；黃松元，2011）的研究……

英文：一些研究 (Hale & Trumbetta, 2008; McDermott, 2009; Schwartz, 2008) 主張……

七、同位作者相同年代有多筆文獻，應以a、b、c……標示，引用時並依此排序

中文：葉國樑（2006a，2006b，2006c）

英文：Jackson與Taylor (2012a, 2012b, 2013c)

八、寫於圖或表的資料來源以註表示，且需完整寫出資料引用來源

中文：*藥物濫用、毒品與防治*（頁475），楊士隆、李思賢，2012。五南。

英文：*The Nature of Adolescence* (pp. 21-23), by J. C. Coleman, 2011. Routledge.

貳、文末引用文獻格式

文末引用文獻 (References) 的書寫，中文部分以作者之姓氏筆劃（由少至多）編排，英文部分以作者姓氏字母（由A到Z）依序排列。同一文獻的文字行間不空行，但文獻與文獻之間必須空一行。在此列出的文獻必須都是在內文中引用到的，內文中沒有引用過的文獻不得在此列出。

一、1至20位作者（須列出全數作者姓名）

中文：董貞吟、陳美嬿、丁淑萍（2010）。不同職業類別公教人員對過勞死的認知與相關因素之比較研究。*勞工安全衛生研究季刊，18*（4），404-429。

英文：Yen, E. H.-W., & Ferng, J.-W. (2020). A study of sexual knowledge, sexual attitude, and sexual behavior among college students in 2019 and sexual experience survey among 20 year-old college students, 1979-2019. *Journal of Health Promotion and Health Education, 52*, 61-86. http://doi.org/10.3966/207010632020120052003

註：21位以上作者時，僅列出前19位，並以刪節號（…）連接最後一位作者。

二、團體機構作者（須列出機構全名）

中文：行政院衛生署（2006）。*健康達人125*。作者。

英文：American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Author.

三、編輯的書籍

中文：姜逸群、黃雅文（主編）（1992）。*衛生教育與健康促進*。文景。

英文：Shonkoff, J. P., & Meisels, S. J. (Eds.). (2000). *Handbook of early childhood intervention* (2nd ed.). Cambridge University Press.

四、收錄於書中一章

中文：李思賢、林春秀（2012）。藥物濫用常見的盛行率估計法。載於楊士隆、李思賢（主編），*藥物濫用、毒品與防治*（頁87-100）。五南。

英文：Butter, M. (2000). Resilience reconsidered: Conceptual considerations, empirical findings and policy implications. In J. P. Shonkoff & S. J. Meisels (Eds.), *Handbook of early childhood intervention* (2nd ed., pp. 651-682). Cambridge University Press.

五、翻譯類書籍

1. 以翻譯後的語文當參考文獻

Hooyman, N. R., & Kiyak, H. A. (2003)。*社會老人學*（郭鐘隆、林歐貴英，合譯）。五南。

2. 以原語文當參考文獻（翻譯後的書名置於方括弧內）

Danielson, C., & McGreal, T. L. (2000). *Teacher evaluation to enhance professional practice* [教師專業評鑑]. Educational Testing Service.

六、參文或研究報告

1. 未出版之碩、博士學位論文

中文：張淑雯（2010）。*他們與酒的故事：蘭嶼達悟族飲酒脈絡與健康意涵之研究*〔未出版之博士論文〕。國立臺灣師範大學。

英文：Healey, D. (2005). *Attention deficit/hyperactivity disorder and creativity: An investigation into their relationship* [Unpublished doctoral dissertation]. University of Canterbury.

2. 會議／專題研討會中發表的論文

中文：邱智強（2012，12月8日）。*銀髮族心理健康促進*〔研討會論

文〕。中華民國學校衛生學會、臺灣健康促進暨衛生教育學會聯合年會：2012年健康促進國際學術研討會，臺北市。

英文：Lee, T. S.-H. (2011, June 18). *Evaluating the impacts of methadone maintenance treatment on heroin abusers in Taiwan: An 18-month follow-up study* [Paper presentation]. 2011 NIDA International Forum and the 73rd Annual CPDD Meeting, Hollywood, FL, United States.

3. 委託／補助研究報告

李思賢（2010）。*健走運動與社會心理介入對退休中老年人心理幸福感與生命統整性之影響與性別差異*（NSC99-2410-H-003-127-MY2）〔補助〕。國立臺灣師範大學。https://www.grb.gov.tw/search/planDetail?id=2129050

七、網路資料

中文：李思賢（2012）。*健康促進與衛生教育學報稿約*。臺灣師範大學健康促進與衛生教育學系。http://www.he.ntnu.edu.tw/download.php?fcId=2

英文：Taiwan Department of Health. (2011). *Cause of death statistics*. DOH. http://www.doh.gov.tw/CHT2006/DM/DM2_p01.aspxclass_no=25&level_no=1&doc_no=80728.

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