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# Consumers' attitudes towards healthy eating: a qualitative comparison between older and younger Chinese consumers

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## Abstract

**Purpose** – Unhealthy diets are associated with an increased risk of non-communicable diseases and present a significant public health challenge. When developing effective interventions and policies, consideration must be given to the unique social culture in which food choice is embedded. Health vulnerabilities to poor nutrition exist throughout life but may be influenced by socio-cultural factors such as age. This study aimed to assess the attitudes of older or younger Chinese consumers towards healthy eating and explore the factors influencing their food choices.



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**Design/methodology/approach** – Semi-structured interviews were conducted in Wuhan, China, with 20 consumers aged 18–25 (Group A) and 20 consumers aged 65 and over (Group B).
**Findings** – Thematic analysis revealed that the two groups had positive attitudes towards healthy eating, although Group A participants were more knowledgeable. Time pressure, food prices and social networks differentially influence healthy eating practices across age groups.
**Originality/value** – Given China's economic and cultural context, healthy eating interventions should consider the individual characteristics and food preferences of the different age groups. This approach can optimize targeted healthy eating interventions, and media communications related to healthy eating.

**Keywords** Healthy eating, Attitude, Food choices, Chinese consumers, Older people, Younger people
**Paper type** Research paper

## 1. Introduction

Life expectancy has increased in recent decades owing to improvements in sanitation, healthcare, and living standards (Mathers *et al.*, 2015; Dixon, 2021). However, non-communicable diseases (NCDs) continue to pose significant health threats (Barik and Arokiasamy, 2016; Hegelund *et al.*, 2020). The World Health Organization (WHO) estimates that NCDs cause 41 million deaths annually, with 75% of the deaths occurring in low- and middle-income countries and emerging economies (Rudd *et al.*, 2020; Alzahrani *et al.*, 2023). NCDs are the leading cause of the disease burden in China (Zhou *et al.*, 2019). Although most NCDs are associated with older people, the incidence among younger populations is increasing (Wang *et al.*, 2020).

Household poverty and economic stress are closely linked to unhealthy diets and NCDs (Graca *et al.*, 2018). As diet significantly affects resistance to related diseases, healthy eating is an effective strategy to manage diet-related diseases (Jyvakorpi, 2016). Therefore, the Chinese government must consider its unique social and dietary culture when developing relevant health and nutritional interventions or policies (Gu and Tan, 2019).

Food choices influence physical and mental health, and life satisfaction (Gong *et al.*, 2020; Liu and Grunert, 2020). Individuals' food choices are influenced by various factors, such as mood, sensory preference, weight management goals, and personal ethical principles (Phan and Chambers, 2016; Mohajeri *et al.*, 2020; Souza *et al.*, 2020). Different age groups may have varying perceptions of what motivates their food choices (Phan and Chambers, 2016). Several factors influence food choices in the older population, such as health status, personal income, taste preferences, and food availability (Rohde *et al.*, 2017; Kummer *et al.*, 2019). Younger people may have higher stability and autonomy in food choices than other age groups, which are influenced by a complex set of biological, social, economic, and environmental factors (Gong *et al.*, 2020). Social Changes and rapid economic growth have resulted in younger Chinese people increasingly experiencing serious eating-related health problems such as obesity, hypertension, and diabetes (Li *et al.*, 2022; Mu *et al.*, 2022).

The current literature on healthy eating in China often focuses on all adults over the age of 18 or a single population group (e.g. students and pregnant women), excluding older consumers (Yan *et al.*, 2022; Huang *et al.*, 2022; Ji *et al.*, 2022). There is limited research on the potential heterogeneity of healthy diets and their associated influences among different age groups in China and there is a lack of rich data on the development of age-related healthy diet interventions. Given China's unique demographic trends, the increasing burden of NCDs, and rapid socioeconomic changes, understanding the dietary habits of different age groups is crucial. Therefore, this study aimed to assess and compare the attitudes, knowledge gaps, and factors influencing healthy diets and food choices of younger or older Chinese consumers. This study reveals how different generations manage health challenges and food environments, inform the development of targeted public health strategies and nutrition policies in China, address health inequalities, and provide valuable insights into global health knowledge, thereby contributing to age-related diets and health interventions to improve health outcomes among Chinese consumers.

## 2. Methods

A qualitative study was conducted to address the aims of this study. One-on-one interviews were chosen to allow access to a wide range of opinions, experiences, and knowledge (Adhabi and Anozie, 2017). This method also enabled the researcher to obtain detailed and specific information and observe the participants' non-verbal behaviors, providing a comprehensive understanding of their responses (Opdenakker, 2006).

### *2.1 Sample*

This qualitative study was conducted in Wuhan, Hubei Province, China. Wuhan is a cosmopolitan city in central China that encompasses diverse demographic groups and social environments (Han and Wu, 2004). Eligible participants were consumers aged 18–25 (Group A) and 65 years and above (Group B) who lived independently in the Wuhan urban area, excluding those in sheltered accommodations who were unable to choose their food freely. Participants were recruited by a local social recruitment company to ensure gender, age, and identity diversity (e.g. students, retired persons, and employed persons). The sample size (20 participants per group) was determined by the purpose and scope of the study, ensuring that a sufficiently representative sample was included to obtain meaningful results, while allowing for a detailed examination of experiences and attitudes (Guest *et al.*, 2006). A sample of 15–20 people is sufficient to identify the themes emerging from interviews (Vasileiou *et al.*, 2018), making this study sample size more than adequate. A stratified sampling strategy was used to understand the dietary diversity across age groups. Interested individuals received a phone call with interview details (date, time, and method) from researchers. Seven participants (six from Group A and one from Group B) participated in the online interviews via WeChat. The sociodemographic characteristics of the 40 participants are shown in Table 1.

| Variable | | Group A (18–25 years old) | | Group B (65 years old and above) | |
|---|---|---|---|---|---|
| | | *n* | % | *n* | % |
| Gender | Male | 11 | 55.0 | 9 | 45.0 |
| | Female | 9 | 45.0 | 11 | 55.0 |
| Marital status | Married | 3 | 15.0 | 18 | 90.0 |
| | Single | 17 | 85.0 | 0 | 0.0 |
| | Widowed | 0 | 0.0 | 2 | 10.0 |
| Education | College/University | 20 | 100.0 | 0 | 0.0 |
| | Secondary school | 0 | 0.0 | 13 | 65.0 |
| | Primary school | 0 | 0.0 | 3 | 15.0 |
| | No education | 0 | 0.0 | 4 | 20.0 |
| Employment status | Employed | 11 | 55.0 | 3 | 15.0 |
| | Student | 8 | 40.0 | 0 | 0.0 |
| | Never worked | 1 | 5.0 | 5 | 25.0 |
| | Retired | 0 | 0.0 | 12 | 60.0 |
| Housing | Rent a house | 10 | 50.0 | 0 | 0.0 |
| | Home | 7 | 35.0 | 20 | 100.0 |
| | University | 1 | 5.0 | 0 | 0.0 |
| | Company | 2 | 10.0 | 0 | 0.0 |
| Household status | Living alone | 6 | 30.0 | 1 | 5.0 |
| | Living with family | 7 | 35.0 | 19 | 95.0 |
| | Living with friend | 7 | 35.0 | 0 | 0.0 |

**Source(s):** Authors' own work

**Table 1.** Overview of participant characteristics ($N = 40$)

*2.2 Procedures*

Interviews were conducted using a combination of online and face-to-face methods between June and August 2022, as a result of the Covid-19 lockdown in parts of Wuhan. Face-to-face and online interviews were conducted by a Chinese recruiting team and the lead authors (JD). A critical literature review of healthy eating, factors influencing food choices (e.g. time pressure and food prices), and dietary promotion measures informed the development of the interview questions. Based on this review, a semi-structured interview guide was developed (see Supplementary Material Parts A, B, and C), covering attitudes towards healthy eating, motivations for food choices, and advice on healthy eating, with additional probes to stimulate idea generation. Sociodemographic information, such as age, employment status, and marital status, was recorded for each participant. Each interview followed the same study protocol, and all interviewers attended a training session conducted by the lead author (JD) to familiarize with the interview guide and procedure.

A pilot study was conducted to check the comprehensibility of the interview questions and to confirm the relevance and coverage of the study aims (Chenail, 2011; Kallio *et al.*, 2016), with two consumers aged 65 years and above and two consumers aged 18–25 years. Pilot interviews were excluded from the analysis, and no significant protocol changes were made after the pilot.

Interviews were conducted in Mandarin Chinese, lasted between 20 and 30 min, and were recorded digitally. JD reviewed each interview recording, commented on poor-quality interviews, and requested additional interviews as needed. All the participants signed an informed consent form and received a $13.9 gift as an incentive.

*2.3 Data analysis*

All recorded interviews were transcribed verbatim using the Lark software and further verified by JD to ensure the accuracy of the transcripts. Chinese transcripts were translated into English using translation tools, such as Google Translate and Sougou Translate. To ensure accurate conveyance of the original meaning of the transcripts, JD conducted back-translation and checked the English transcripts. The NVivo R1 software was used for data management and coding.

An inductive and deductive thematic approach was applied following Braun and Clarke (2006). The first stage involved "familiarization" with the data, where JD read all interview transcripts several times to thoroughly understand the data. JD, WL, BC, SJ and LF systematically categorized significant data across the dataset according to the study aims. The third stage involved "searching for themes", in which BC, WL, SJ and LF organized the coding into potential themes and subthemes inductively, including linking data with each theme and subtheme. In the "reviewing themes" stage, guided by the themes obtained from a previous systematic review, JD independently returned and read through the dataset, checking the relevance of the data to the themes, replacing existing inappropriate codes with new ones, and organizing the codes, quotes and themes into tables. The next stage entailed the analysis and refinement of the details of each theme, subtheme, and code, generating clear definitions and names for each theme. In the final stage, to ensure consistency among the themes, codes, quotes, and the overall dataset, BC, SJ, WL and LF re-reviewed the relevant data, verifying that all themes and subthemes accurately represented the data and addressed the study aims. Any disagreements were resolved through discussion until a consensus was reached. Descriptive statistics, including counts and percentages, were used to summarize the participants' demographic characteristics.

Five themes emerged from the interviews (see Table 2): The first theme was general attitudes towards healthy eating, encompassing participants' attitudes and dietary habits. This section explored participants' perceptions of healthy eating, their daily dietary patterns,

| Themes | Subthemes | Codes | Example quote |
|---|---|---|---|
| Attitudes towards general healthy eating | Attitudes | Positive | Health is a light and balanced diet, which is healthy for human body (Group A, Male) |
| | | Not positive | |
| | Consumers' eating habits | Daily diets | I usually eat steamed buns and eggs in the morning (Group B, Male) |
| | | Healthy food type | A combination of meat and vegetables (Group B, Male) |
| | | Unhealthy food type | Barbecue and fried food (Group B, Male) |
| | | Healthy eating score | I want to score 70 points, because I try to maintain long-term eating habits, but it has nothing to do with nutrition and health (Group A, Female) |
| Motivation for healthy eating | Personal factors | Health status | I have acute gastroenteritis, so I am very strict about my diet (Group A, Female) |
| | | Weight | I often stay up late and eat takeout and high-fat food. I gain 10 kilograms a year (Group A, Male) |
| | Psychological factors | Emotion/mood | I think food can change my mood greatly (Group A, Female) |
| | Other factors | Concerns about food safety | Some foods contain substances that make children mature early and contain pesticide residues (Group A, Male) |
| | | Concerns about food quality | I care about how the food looks and don't eat the unhealthy ones (Group B, Male) |
| | | Perceived benefits | A healthy diet can supplement the nutrients needed by the body, prevent intestinal diseases, and avoid excessive fat (Group A, Female) |
| Barriers to healthy eating | Personal factors | Time pressure | I felt physically exhausted after work, so I did not have much energy to cook (Group A, Male) |
| | Economic factors | Food price | It's right to choose food with a lower price (Group A, Male) |
| | | Personal income | My income covers my food expenses (Group B, Female) |
| | Social factors | Friends and family | What I eat is influenced by my family (Group A, Male) |
| Awareness of healthy eating | Food scandal | Food scandal | Our local cabbage was found to have excessive formaldehyde (Group A, Male) |
| | Policy and measures | Policy and measures | Government departments produce posters on healthy eating (Group B, Female) |
| Advice on healthy eating | Advice | Advice | Food suppliers should not demand external packaging for vegetables and fruits but should focus on the quality and health of the food (Group A, Female) |

**Source(s):** Authors' own work

**Table 2.**
Interview themes

their understanding of foods categorized as (un)healthy, and their assessment of the healthiness of their diets through scoring systems. The second theme focused on the participants' motivations for healthy eating, including personal, psychological, and other factors. This section examines how health conditions, weight management goals, diseases,

emotional factors, food safety perceptions, food quality considerations, and perceived benefits influenced participants' choices of healthy eating. The third theme addressed the participants' barriers to adopting healthy eating habits, encompassing personal, economic, and social factors. It discusses barriers, such as time constraints, food costs, and social networks (e.g. family and friends), that affect participants' ability to maintain a healthy diet. The fourth theme explored participants' awareness of healthy eating, including their knowledge of food scandals in China, and societal measures aimed at promoting healthy food choices. This section assessed participants' ability to access and seek food-related information, reflecting their depth of understanding of healthy eating practices. The final theme was the participants' advice on strategies to promote healthy eating, highlighting the collective responsibility of various societal sectors in developing healthier dietary behaviors among the population.

## 3. Results

Twenty males and 20 females participated in this study. The mean age of Group A was 23 years (SD = 2.0) and that of Group B was 70 years (SD = 4.0). All the participants resided in urban areas and had a high socio-economic background. All Group A participants had higher education levels than Group B participants. In terms of employment, 55% of the Group A participants and 15% of the Group B participants held stable jobs with regular income. A small number of Group A participants (15%) and most Group B participants (90%) were married, and 83% of the participants in the two groups lived with family or friends.

The interviews provided extensive insights into Chinese consumers' understanding of healthy eating, their motivation for food choices, and their responses in various contexts.

### *3.1 Healthy eating attitudes*

Participants distinguished between healthy and unhealthy diets based on three primary criteria: food type, nutritional properties, and cooking method. When describing healthy diets, all participants consistently referenced terms such as low-fat, fruits and vegetables, and a balanced diet. Fruits and vegetables were the most frequently mentioned items, with nearly all participants agreeing that a healthy diet should include plenty of fresh produce. Additionally, participants regarded traditional Chinese staples such as pasta (including noodles and rice) and porridge, as essential to a healthy diet.

Compared to the less educated people in Group B, participants from the more educated Group A demonstrated greater awareness of food nutrients such as vitamins and proteins. They often added nutrient-rich foods, such as steaks and eggs, to their diets according to their healthy eating knowledge and experience. One participant from Group A emphasized the importance of employing healthy cooking techniques, such as steaming and boiling, to maintain the nutritional value of meals.

Fried, processed, and spicy foods were categorized as unhealthy by participants. These foods were described as tasty but high in fat, salt, and sugar, negatively impacting health. All participants provided reasons why takeaway food and eating out were unhealthy. Both groups agreed that takeout and eating out often involve excessive use of seasonings and oil and cooking methods such as frying, pan-frying, grilling, and marinating, which lead to nutrient loss and the production of harmful substances. Additionally, two participants from Group B mentioned the dangers of the "three-no" products (i.e. no production date, manufacturer, and quality certificate).

> It is important to eat a good mix of meals, eat fruit regularly, eat less junk food and fried food, and try to make meals less greasy (Group A, Female)

> For carbohydrates, you could have a bit of rice … For fats, I think steak is a good source of fat (Group A, Male)

> Unhealthy food would be processed foods, such as snacks, which have a lot of additives (Group B, Male)

The participants were asked to rate the healthiness of their diets on a scale of 100. The average score for Group A was 74.25 ± 10.55, while that for Group B was 86.9 ± 6.53. Based on their responses to a healthy diet and their dietary scores, all participants were classified into three categories. First, all Group B participants and a few from Group A highly valued a healthy diet, scoring above 90, and believed that they had a healthy lifestyle. They focus on eating low-fat foods with less oil and salt, which are easy to digest. The second category included most Group A participants who valued health but had mid-range dietary scores (70–89). Due to time constraints from work and study, these participants did not always eat healthily, mixing healthy and unhealthy foods, while trying to maintain a generally healthy diet. They had a more positive attitude and intention towards, a healthy diet. The last category, consisting of a few Group A participants, was dissatisfied with the health of their diet (<70). Although they recognized the importance of a healthy diet, factors such as food prices, time pressures, social networks, and taste preferences influenced their diet and food choices, which were irregular and mainly consisted of greasy and spicy foods. However, they did not intend to modify their dietary habits.

### *3.2 Motivation for healthy eating*

Participants linked the benefits of a healthy diet to their previous experiences with disease treatment, nutritional supplementation, food production processes, weight management, and emotional improvement. The primary motivation for prioritizing healthy eating was disease treatment and prevention, with participants reporting personal or family health issues. The participants in Group B focused on health and diet because of their physical condition and desire for longevity. Group A participants emphasized the importance of a healthy diet for replenishing the body with nutrients and energy. Most Group A participants cited examples of nutrients in food and their benefits, motivating them to consume healthier foods such as vegetables and fruits.

> My blood sugar was high, so I am usually very careful. I try to eat less meat and more vegetables and mixed grains, which is good for diabetes (Group B, Male)

> I know some fruits can relieve constipation (Group A, Male)

Participants associated healthy eating with food production processes, believing that self-produced or locally sourced foods are healthier owing to fewer chemical additives and pesticides. Group B participants preferred purchasing food from trusted suppliers and mentioned practices such as washing food multiple times and cooking at high temperatures to ensure food safety.

> I am very afraid of vegetables contaminated by pesticides, and pesticides are rarely used on vegetables in winter (Group B, Female)

Participants acknowledged the impact of body weight on food choices. Some Group A participants, especially women, had reduced fat and increased protein intake to achieve a more ideal body shape. Group B participants were less concerned about the impact of their weight on lifestyle and eating habits.

> Weight does not affect my diet (Group B, Female)

Compared with Group B participants, Group A participants were more likely to mention the connection between diet, mental health and emotions. In a positive emotional state, they consumed more healthy protein-based foods and vegetables; in a negative state, they experienced a loss of appetite or preferred high-calorie foods. Additionally, food also affected Group A participants' daily emotions, with a healthy diet increasing happiness.

> When I am in a good mood, I am willing to spend the time and effort to cook a very nutritious meal (Group A, Female)

*3.3 Challenges to healthy eating*

Most Group A participants indicated that daily work, study pressures, and lifestyles left them with insufficient time to prepare and cook healthy meals. Participants lacking cooking skills in Group A were more likely to eat out or order takeout, which often led to an increased consumption of high-oil and high-fat foods. Group B participants generally did not perceive the time pressure to maintain healthy eating habits.

> We are now retired and at home and have time to cook or buy food, I don't think healthy eating is difficult. Of course, it's not the same for younger people. Because younger people are busy with work and they don't have as much time to cook (Group B, Female)

Although all the participants indicated that their income or pensions covered their daily food expenses, most still preferred lower-priced foods and provided tips for buying cheaper products. When faced with high prices, some participants mentioned reducing or discontinuing purchases of healthy foods such as fish, seasonal vegetables, and fruits. For Group B participants in particular, past experiences of poverty led them to pay more attention to the cost of living and to try to spend the least amount of money on food, clothing, transport, and so on.

> If there are two different foods, I prefer the lower-priced one (Group A, Female)

Social networking also played an important role, as the majority (83%) of the participants in both groups lived with friends or family members. Both groups acknowledged that the eating habits of those around them influenced their dietary choices and food purchasing behaviors. Group A participants, especially those living with their parents, reported that they adopted their parents' traditional eating habits to achieve basic health and nutrition. By contrast, participants in Group B indicated that younger family members might resist healthy eating habits, especially those who do not like low-salt diets or certain vegetables. Several participants admitted that they would adjust their food choices to match their social networking preferences to maintain harmony.

> My children and I have different tastes, so sometimes there will be some conflicts, but I try to control them. Sometimes what I eat does not fit their taste, so I have to cook it for them again (Group B, Female)

*3.4 Awareness of healthy eating*

When asked about food scandals in China, majority of Group A participants and a minority of Group B participants recalled recent examples. However, most Group B participants indicated that they had a limited awareness of food-related health issues.

> Add water to the pork (Group A, Male)

> The pickle in instant noodles is made in the mud (Group A, Male)

Most participants demonstrated an awareness of social policies and measures aimed at promoting healthy eating. They expressed confidence in the Chinese government's commitment to enhancing food health and safety regulations, emphasizing increased supervision and investment in food regulatory agencies. Participants in Group A, who had a good educational background, noted the abundant availability of information on healthy eating provided by the internet. Additionally, several participants highlighted proactive measures implemented by food industry stakeholders, such as manufacturers, restaurants, and supermarkets, to promote healthy food choices, such as vegetarian restaurants and plant-based meat alternatives. A few participants referenced authoritative documents and symbols guiding healthy dietary practices in China, such as food safety labels, food pyramids, and the latest Chinese Dietary Guidelines.

> Some of the health talk shows that are shown on government Channels, talk about what foods are healthy to eat in life. There is a government policy to promote healthy eating (Group A, Male)

### *3.5 Advice on healthy eating*

Participants believed that promoting healthy eating is a societal responsibility, with the government playing the most important role. They suggested that the government boosts public confidence in healthy eating choices through education and media. Additionally, implementing economic policies to regulate food market prices and protect low-income individuals could allow more people to choose healthy food. A few participants stated that individuals also need to take responsibility for their diets, and that food companies and farmers are responsible for ensuring the health of the food they sell.

> They (the government) can increase education and promotion of healthy eating, create a healthy low-carbon eating environment, and strengthen public policy research (Group A, Female)

## 4. Discussion

The results indicated that, despite the different ages of participants, there was a similar understanding of the definition of healthy eating, which is consistent with Australian qualitative research (Asamane *et al.*, 2019). These perceptions are also consistent with the guidelines outlined in China's official dietary recommendations, such as the Chinese Residents' Balanced Diet Pagoda (Chinese Nutrition Society, 2022). Participants categorized foods as either healthy or unhealthy, based on food type, nutrient content, and perceived quality. Similar results have been reported in Brazilian, Spanish, French, and Irish qualitative studies (Gaspar *et al.*, 2020; Hazley *et al.*, 2024). This classification aligns with the global trends in nutritional perception and emphasizes the universality of dietary assessments across different cultural contexts.

The results showed that despite having a higher level of education and more knowledge about healthy eating, Group A participants had lower overall health scores and behaviors than those in Group B. This suggests that there are significant differences in the cognition and practice of healthy eating among different populations in China and that knowledge does not always translate directly into behavior (MacDermid and Graham, 2009). This gap in attitude and practice is common in health research and is influenced by a variety of factors such as time pressure, social factors, and personal preferences (Huseynov and Palma, 2021; Chen and Antonelli, 2020; Koster *et al.*, 2023). However, this result contrasts with a quantitative study in China, which showed that people with higher education levels have better diet quality than those with lower education levels (Yuan *et al.*, 2018). This difference reflects the complexity of translating knowledge into actionable health behaviors, and the need for more personalized and situational healthy eating interventions to effectively translate health knowledge into actual behaviors.

Exploration of the interaction between diet and human psychology has increasingly focused on how emotions influence food choices and dietary behaviors (Evers *et al.*, 2018; Devonport *et al.*, 2019). This study presents results on how different emotional states affect consumers' healthy eating decisions and is consistent with quantitative studies on the relationship between diet and emotion conducted in Turkey, Brazil, and China. Positive emotions tend to promote the consumption of nutritious foods and active participation in food preparation, whereas negative emotions lead to increased consumption of indulgent foods and a preference for convenient meal choices (Aguiar-Bloemer and Diez-Garcia, 2018; Xie *et al.*, 2023; Öztürk *et al.*, 2024). The results also suggest that healthy diets have an impact on emotional well-being and are similar to quantitative findings from Finland and Australia, which showed that a healthy diet reduces stress and alleviates negative emotions, and that higher consumption of fruits and vegetables is associated with greater life satisfaction and well-being (El Ansari *et al.*, 2015; Mujcic and Oswald, 2016). Several quantitative surveys on the mental health of Chinese people have indicated that the mental health of Chinese consumers is generally at a medium to low level, with depression and anxiety showing a clear upward trend, especially after the Covid-19 pandemic (Ren *et al.*, 2020; Hu *et al.*, 2021). Given these challenges, it is becoming increasingly important to explore and implement strategies that effectively relieve stress and enhance emotional resilience among Chinese consumers (Hu *et al.*, 2021). Strategies to counteract negative moods (e.g. positive mood induction procedures) can address contemporary psychological issues and encourage healthier food consumption (Cardi *et al.*, 2015).

Even in high-income countries such as the United States, the cost of healthy foods is perceived as a barrier to maintaining a healthy diet (de Mestral *et al.*, 2017). The results suggested that, despite age and income differences, both groups of participants had similar economic perceptions of food choices and health trade-offs. All participants consistently preferred low-priced foods even when their basic needs were met. This preference may be due to the unique life experiences and social backgrounds of Chinese consumers, including the influence of historical events such as the three-year famine (1959–1961) and Covid-19 pandemic in 2019 (Chen and Rupelle, 2016; Yang *et al.*, 2022). These events have increased the pressure on food availability and pricing systems for Chinese consumers and food suppliers, highlighting the importance of financial assistance in ensuring access to healthy diets (Lu *et al.*, 2022). Economic constraints also prompted participants to prioritize food affordability over nutritional value. A similar effect was observed in a quantitative study in the United States, where it was observed that economic exclusion significantly affected diet quality and contributed to social health inequalities (Ranjit *et al.*, 2020). Policymakers and food industry stakeholders should develop reasonable tax and subsidy policies to change the relative prices of healthy foods and use these measures to promote the production and consumption of healthier foods, making them more affordable (Blakely *et al.*, 2020).

Social support motivated participants to eat healthily. Prior research distinguishes between two dining styles: Asian cultures tend to emphasize communal eating, whereas Western cultures favor individual dining (Cooper, 1986; Cohen and Avieli, 2004). In communal cultures, sharing food is not only a social norm but also symbolizes the core ethical principles of trust and tolerance (Day, 2004). In contrast, eating styles in Western countries reflect individualism (Cohen and Avieli, 2004). A quantitative study in the United States found that communal eating developed beneficial dietary models, enhanced dietary diversity, promoted meal regularity, and increased food satisfaction (Bloom *et al.*, 2017). Although most participants lived with others, recent empirical research on Chinese attitudes towards independent living highlights the increasing importance of personal privacy and autonomy in modern Chinese society, and the rise in the proportion of individuals living independently, leading to decreased engagement in social networks (Xu *et al.*, 2019; Zhang *et al.*, 2021). Additionally, geographic distance from friends and family

reduces access to emotional and material support, which may influence individuals to make unhealthy food choices, thereby negatively impacting health outcomes (Liu and Grunert, 2020). This issue is particularly pronounced among Older Chinese people (Zhou *et al.*, 2023). Enhancing emotional and dietary communication with families and communities is crucial to mitigate the negative effects of social isolation and geographic separation on diet quality. This can be achieved through face-to-face interactions or digital platforms. Future research and health promotion initiatives should explore innovative technologies, such as artificial intelligence and mobile applications, to provide personalized dietary advice and support, address individual needs, and develop health-promoting dietary behaviors (Sefa-Yeboah *et al.*, 2021).

The promotion of healthy eating requires cooperation among the government, food industry, and individuals. Unlike policies in the United States and the European Union, which emphasize food safety, consumer protection and transparency in food labelling, Chinese healthy eating policies focus on achieving national public health goals, improving the nutritional status of the population and addressing the challenges of chronic diseases (Bairati, 2020; Cai *et al.*, 2022). Through the National Nutrition Plan (2017–2030) and Healthy China 2030 Plan, the Chinese government has implemented a series of public health actions and education campaigns to directly guide the public's dietary behaviors (State Council of the People's Republic of China, 2017, 2022). The actions taken by Chinese food manufacturers, restaurants, and supermarkets to promote healthy eating also align with global trends towards healthier and more sustainable foods (Pulker *et al.*, 2018; Mozaffarian *et al.*, 2018), including increasing food availability, improving food quality, and providing social reference information (Li and Yu, 2020). It is essential to improve the effectiveness of policies, strengthen public-private partnerships and promote education to achieve China's long-term health goals. Coping with the Changing dietary needs of consumers and public health challenges can not only improve the nutritional status of Chinese people, but also contribute to global sustainable health.

## 5. Research limitations

This study was conducted using a sample of 40 consumers from a limited geographical area (urban Wuhan). Future studies should examine the factors and differences identified by using larger samples across different regions of China.

It is unclear whether the differences in the factors influencing the food choices of the Group A and B participants reflect age-related differences or differences in the acquisition of food preferences. That is, Group A participants will continue to be influenced by the same motivational factors as they age owing to the temporal context in which these motivations were formed. Longitudinal research over the course of a lifetime may be required to fully understand these influences.

## 6. Conclusion

This study used qualitative (interview) methods to assess the perceptions of consumers of different age groups regarding healthy eating and food choices in Wuhan, China. Understanding the personal and contextual influences on consumption behavior patterns is essential for planning future interventions to support healthy food choices among Chinese consumers. Although younger consumers may have a good understanding of healthy eating, actual food choices often conflict with views on healthy eating due to economic, social, and time constraints. Considering the differential influences of the current economic, environmental, and social conditions in China on different age groups is necessary when developing healthy eating interventions and policies.

## References

Adhabi, E. and Anozie, C.B. (2017), "Literature review for the type of interview in qualitative research", *International Journal of Education*, Vol. 9 No. 3, pp. 86-97, doi: 10.5296/ije.v9i3.11483.

Aguiar-Bloemer, A.C. and Diez-Garcia, R.W. (2018), "Influence of emotions evoked by life events on food choice", *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, Vol. 23 No. 1, pp. 45-53, doi: 10.1007/s40519-017-0468-8.

Alzahrani, M.S., Alharthi, Y.S., Aljamal, J.K., Alarfaj, A.A., Vennu, V. and Noweir, M.D. (2023), "National and regional rates of chronic diseases and all-cause mortality in Saudi arabia—analysis of the 2018 household health survey data", *International Journal of Environmental Research and Public Health*, Vol. 20 No. 7, 5254, doi: 10.3390/ijerph20075254.

Asamane, E.A., Greig, C.A., Aunger, J.A. and Thompson, J.L. (2019), "Perceptions and factors influencing eating Behaviours and physical function in community-dwelling ethnically diverse older adults: a longitudinal qualitative study", *Nutrients*, Vol. 11 No. 6, 1224, doi: 10.3390/nu11061224.

Bairati, L. (2020), "Legal culture and food culture in labelling regulation: an EU/US comparative analysis", *Global Jurist*, Vol. 20 No. 1, 20190055, doi: 10.1515/gj-2019-0055.

Barik, D. and Arokiasamy, P. (2016), "Rising health expenditure due to non-communicable diseases in India: an outlook", *Frontiers in Public Health*, Vol. 4, 268, doi: 10.3389/fpubh.2016.00268.

Blakely, T., Cleghorn, C., Mizdrak, A., Waterlander, W., Nghiem, N., Swinburn, B., Wilson, N. and Mhurchu, C.N. (2020), "The effect of food taxes and subsidies on population health and health costs: a modelling study", *The Lancet Public Health*, Vol. 5 No. 7, pp. 404-413, doi: 10.1016/s2468-2667(20)30116-x.

Bloom, I., Edwards, M., Jameson, K.A., Syddall, H.E., Dennison, E., Gale, C.R., Baird, J., Cooper, C., Aihie Sayer, A. and Robinson, S. (2017), "Influences on diet quality in older age: the importance of social factors", *Age and Ageing*, Vol. 46 No. 2, pp. 277-283, doi: 10.1093/ageing/afw180.

Braun, V. and Clarke, V. (2006), "Using thematic analysis in psychology", *Qualitative Research in Psychology*, Vol. 3 No. 2, pp. 77-101, doi: 10.1191/1478088706qp063oa.

Cai, L., Hu, X., Liu, S., Wang, L., Wang, X., Tu, H. and Tong, Y. (2022), "China is implementing the national nutrition plan of action", *Frontiers in Nutrition*, Vol. 9, 983484, doi: 10.3389/fnut.2022.983484.

Cardi, V., Leppanen, J. and Treasure, J. (2015), "The effects of negative and positive mood induction on eating behaviour: a meta-analysis of laboratory studies in the healthy population and eating and weight disorders", *Neuroscience and Biobehavioral Reviews*, Vol. 57, pp. 299-309, doi: 10.1016/j.neubiorev.2015.08.011.

Chen, P.J. and Antonelli, M. (2020), "Conceptual models of food choice: influential factors related to foods, individual differences, and society", *Foods*, Vol. 9 No. 12, 1898, doi: 10.3390/foods9121898.

Chen, H. and Rupelle, M.L. (2016), "The Great Famine and household saving in China", Working Paper.

Chenail, R.J. (2011), "Interviewing the investigator: strategies for addressing instrumentation and researcher bias concerns in qualitative research", *Qualitative Report*, Vol. 16 No. 1, pp. 255-262.

Chinese Nutrition Society (2022), "Revision and analysis of the balanced dietary Pagoda for Chinese Residents", available at: http://dg.cnsoc.org/article/04/RMAbPdrjQ6CGWTwmo62hQg.html (accessed 27 June 2024).

Cohen, E. and Avieli, N. (2004), "Food in tourism: attraction and impediment", *Annals of Tourism Research*, Vol. 31 No. 4, pp. 755-778, doi: 10.1016/j.annals.2004.02.003.

Cooper, E. (1986), "Chinese table manners: you are how you eat", *Human Organization*, Vol. 45 No. 2, pp. 179-184, doi: 10.17730/humo.45.2.4034u85x3058m025.

Day, M. (2004), "The phenomenology of food consumption", *Food and everyday life*, pp. 217-229.

de Mestral, C., Khalatbari-Soltani, S., Stringhini, S. and Marques-Vidal, P. (2017), "Fifteen-year trends in the prevalence of barriers to healthy eating in a high-income country", *The American Journal of Clinical Nutrition*, Vol. 5 No. 3, pp. 660-668, doi: 10.3945/ajcn.116.143719.

Devonport, T.J., Nicholls, W. and Fullerton, C. (2019), "A systematic review of the association between emotions and eating behaviour in normal and overweight adult populations", *Journal of Health Psychology*, Vol. 24 No. 1, pp. 3-24, doi: 10.1177/1359105317697813.

Dixon, A. (2021), "Why we need to face up to the ageing population?", *Health Economics, Policy and Law*, Vol. 16 No. 4, pp. 379-382, doi: 10.1017/s1744133120000407.

El Ansari, W., Suominen, S. and Berg-Beckhoff, G. (2015), "Mood and food at the University of Turku in Finland: nutritional correlates of perceived stress are most pronounced among overweight students", *International Journal of Public Health*, Vol. 60 No. 6, pp. 707-716, doi: 10.1007/s00038-015-0717-4.

Evers, C., Dingemans, A., Junghans, A.F. and Boevé, A. (2018), "Feeling bad or feeling good, does emotion affect your consumption of food? A meta-analysis of the experimental evidence", *Neuroscience and Biobehavioral Reviews*, Vol. 92, pp. 195-208, doi: 10.1016/j.neubiorev.2018.05.028.

Gaspar, M.C.D.M.P., Garcia, A.M. and Larrea-Killinger, C. (2020), "How would you define healthy food? Social representations of Brazilian, French and Spanish dietitians and young laywomen", *Appetite*, Vol. 153, 104728, doi: 10.1016/j.appet.2020.104728.

Gong, Y., Li, J., Xie, J. and Tan, Y. (2020), "Relationship between types of food choice motives and well-being among young and middle-aged Chinese adults", *International Journal of Consumer Studies*, Vol. 44 No. 4, pp. 369-378, doi: 10.1111/ijcs.12573.

Graca, P., Gregório, M.J., de Sousa, S.M., Brás, S., Penedo, T., Carvalho, T., Bandarra, N.M., Lima, R.M., Simão, A.P., Goiana-da-Silva, F., Freitas, M.G. and Araújo, F.F. (2018), "A new interministerial strategy for the promotion of healthy eating in Portugal: implementation and initial results", *Health Research Policy and Systems*, Vol. 16 No. 1, pp. 1-16, doi: 10.1186/s12961-018-0380-3.

Gu, Y.H. and Tan, X.D. (2019), "Implications healthy ageing to China", *Chinese Journal of Public Health*, Vol. 35 No. 8, pp. 941-945.

Guest, G., Bunce, A. and Johnson, L. (2006), "How many interviews are enough? An experiment with data saturation and variability", *Field Methods*, Vol. 18 No. 1, pp. 59-82, doi: 10.1177/1525822x05279903.

Han, S.S. and Wu, X. (2004), "Wuhan", *Cities*, Vol. 21 No. 4, pp. 349-362, doi: 10.1016/j.cities.2004.03.007.

Hazley, D., Stack, M. and Kearney, J.M. (2024), "Perceptions of healthy and sustainable eating: a qualitative study of Irish adults", *Appetite*, Vol. 192, 107096, doi: 10.1016/j.appet.2023.107096.

Hegelund, M.H., Faurholt-Jepsen, D. and Bygbjerg, I.C. (2020), "Prevention of opportunistic non-communicable diseases", *International health*, Vol. 12 No. 1, pp. 1-2, doi: 10.1093/inthealth/ihz011.

Hu, Y., Ye, B. and Tan, J. (2021), "Stress of COVID-19, anxiety, economic insecurity, and mental health literacy: a structural equation modeling approach", *Frontiers in Psychology*, Vol. 12, 707079, doi: 10.3389/fpsyg.2021.707079.

Huang, Z., Zhu, Y.D., Deng, J. and Wang, C.L. (2022), "Marketing healthy diets: the impact of health consciousness on Chinese consumers' food choices", *Sustainability*, Vol. 14 No. 4, 2059, doi: 10.3390/su14042059.

Huseynov, S. and Palma, M.A. (2021), "Food decision-making under time pressure", *Food Quality and Preference*, Vol. 88, 104072, doi: 10.1016/j.foodqual.2020.104072.

Ji, F., Yang, Y., Xu, L., Cai, J., Ni, M., Wang, Q., Zhao, S. and Ma, A. (2022), "Poor diet quality evaluated with the China Healthy Diet Index in Chinese tuberculosis patients", *Journal of Human Nutrition and Dietetics*, Vol. 35 No. 6, pp. 1192-1201, doi: 10.1111/jhn.12985.

Jyvakorpi, S. (2016), "Nutrition of older people and the effect of nutritional interventions on nutrient intake, diet quality and quality of life", *The Journals of Gerontology: Series A*, Vol. 56 No. 2, pp. 54-64.

Kallio, H., Pietilä, A.M., Johnson, M. and Kangasniemi, M. (2016), "Systematic methodological review: developing a framework for a qualitative semi-structured interview guide", *Journal of Advanced Nursing*, Vol. 72 No. 12, pp. 2954-2965, doi: 10.1111/jan.13031.

Koster, M., Buabang, E.K., Ivančir, T. and Moors, A. (2023), "A value accumulation account of unhealthy food choices: testing the influence of outcome salience under varying time constraints", *Cognitive Research: Principles and Implications*, Vol. 8 No. 1, p. 4, doi: 10.1186/s41235-022-00459-6.

Kummer, K.K., Pope, H.G., Hudson, J.I., Kemmler, G., Pinggera, G.M. and Mangweth-Matzek, B. (2019), "Aging male symptomatology and eating behavior", *The Aging Male*, Vol. 22 No. 1, pp. 55-61, doi: 10.1080/13685538.2018.1477931.

Li, J. and Yu, T. (2020), "Nudging strategies to promote healthy eating behavior", *Advances in Psychological Science*, Vol. 28 No. 12, pp. 2052-2063, doi: 10.3724/sp.j.1042.2020.02052.

Li, H., Li, D., Wang, X., Ding, H., Wu, Q., Li, H., Wang, X., Li, K., Xiao, R., Yu, K. and Xi, Y. (2022), "The role of dietary patterns and dietary quality on body composition of adolescents in Chinese college", *Nutrients*, Vol. 14 No. 21, 4544, doi: 10.3390/nu14214544.

Liu, R. and Grunert, K.G. (2020), "Satisfaction with food-related life and beliefs about food health, safety, freshness and taste among the elderly in China: a segmentation analysis", *Food Quality and Preference*, Vol. 79, 103775, doi: 10.1016/j.foodqual.2019.103775.

Lu, Y., Zhang, Y., Hong, Y., He, L. and Chen, Y. (2022), "Experiences and lessons from Agri-Food system transformation for sustainable food security: a review of China's practices", *Foods*, Vol. 11 No. 2, p. 137, doi: 10.3390/foods11020137.

MacDermid, J.C. and Graham, I.D. (2009), "Knowledge translation: putting the "practice" in evidence-based practice", *Hand Clinics*, Vol. 25 No. 1, pp. 125-143, doi: 10.1016/j.hcl.2008.10.003.

Mathers, C.D., Stevens, G.A., Boerma, T., White, R.A. and Tobias, M.I. (2015), "Causes of international increases in older age life expectancy", *The Lancet*, Vol. 385 No. 9967, pp. 540-548, doi: 10.1016/s0140-6736(14)60569-9.

Mohajeri, M., Hoojeghani, S., Izadi, A., Ghahremanzadeh, M., Pourfarzi, F., Nemati, A. and Barzegar, A. (2020), "Food choice motivations among Ardabil–Iran adults?", *Nutrition and Food Science*, Vol. 50 No. 4, pp. 641-652, doi: 10.1108/nfs-04-2019-0117.

Mozaffarian, D., Angell, S.Y., Lang, T. and Rivera, J.A. (2018), "Role of government policy in nutrition—barriers to and opportunities for healthier eating", *British Medical Journal*, Vol. 361, k2426, doi: 10.1136/bmj.k2426.

Mu, T., Xu, R., Zhu, Q., Chen, L., Dong, D., Xu, J. and Shen, C. (2022), "Diet-related knowledge, attitudes, and behaviors among young and middle-aged individuals with high-normal blood pressure: a cross-sectional study in China", *Frontiers in Public Health*, Vol. 10, 898457, doi: 10.3389/fpubh.2022.898457.

Mujcic, R. and Oswald, J.A. (2016), "Evolution of well-being and happiness after increases in consumption of fruit and vegetables", *American Journal of Public Health*, Vol. 106 No. 8, pp. 1504-1510, doi: 10.2105/ajph.2016.303260.

Opdenakker, R.J.G. (2006), "Advantages and disadvantages of four interview techniques in qualitative research", *Forum for Qualitative Social Research*, Vol. 7 No. 4, p. 11.

Öztürk, M.E., Yılmaz, H.Ö., Tokaç Er, N., Doğan, G., Meriç, Ç.S. and Yabancı Ayhan, N. (2024), "Factors associated with emotional eating in female college students", *Nutrition and Food Science*, Vol. 54 No. 5, pp. 951-968, doi: 10.1108/nfs-10-2023-0233.

Phan, U.T. and Chambers, E. (2016), "Motivations for choosing various food groups based on individual foods", *Appetite*, Vol. 105, pp. 204-211, doi: 10.1016/j.appet.2016.05.031.

Pulker, C.E., Trapp, G.S., Scott, J.A. and Pollard, C.M. (2018), "Global supermarkets' corporate social responsibility commitments to public health: a content analysis", *Globalization and Health*, Vol. 14 No. 1, pp. 1-20, doi: 10.1186/s12992-018-0440-z.

Ranjit, N., Macias, S. and Hoelscher, D. (2020), "Factors related to poor diet quality in food insecure populations", *Translational Behavioral Medicine*, Vol. 10 No. 6, pp. 1297-1305, doi: 10.1093/tbm/ibaa028.

Ren, X., Huang, W., Pan, H., Huang, T., Wang, X. and Ma, Y. (2020), "Mental health during the Covid-19 outbreak in China: a meta-analysis", *Psychiatric Quarterly*, Vol. 91 No. 4, pp. 1033-1045, doi: 10.1007/s11126-020-09796-5.

Rohde, P., Stice, E., Shaw, H., Gau, J.M. and Ohls, O.C. (2017), "Age effects in eating disorder baseline risk factors and prevention intervention effects", *International Journal of Eating Disorders*, Vol. 50 No. 113, pp. 1273-1280, doi: 10.1002/eat.22775.

Rudd, K.E., Johnson, S.C., Agesa, K.M., Shackelford, K.A., Tsoi, D., Kievlan, D.R., Colombara, D.V., Ikuta, K.S., Kissoon, N., Finfer, S., Fleischmann-Struzek, C., Machado, F.R., Reinhart, K.K., Rowan, K., Seymour, C.W., Watson, R.S., West, T.E., Marinho, F., Hay, S.I., Lozano, R., Lopez, A.D., Angus, D.C., Murray, C.J.L. and Naghavi, M. (2020), "Global, regional, and national sepsis incidence and mortality, 1990-2017: analysis for the Global Burden of Disease Study", *The Lancet*, Vol. 395, 10219, pp. 200-211, doi: 10.1016/s0140-6736(19)32989-7.

Sefa-Yeboah, S.M., Osei Annor, K., Koomson, V.J., Saalia, F.K., Steiner-Asiedu, M. and Mills, G.A. (2021), "Development of a mobile application platform for self-management of obesity using artificial intelligence techniques", *International Journal of Telemedicine and Applications*, Vol. 2021 No. 1, pp. 6624057-6624116, doi: 10.1155/2021/6624057.

Souza, A.M., Bezerra, I.W., Pereira, G.S., Torres, K.G., Costa, R.M. and Oliveira, A.G. (2020), "Relationships between motivations for food choices and consumption of food groups: a prospective cross-sectional survey in manufacturing workers in Brazil", *Nutrients*, Vol. 12 No. 5, 1490, doi: 10.3390/nu12051490.

State Council of the People's Republic of China (2017), "National nutrition plan (2017-2030)", available at: https://www.gov.cn/zhengce/content/2017-07/13/content_5210134.htm (accessed 19 August 2024).

State Council of the People's Republic of China (2022), "Healthy China 2030 plan", available at: https://www.gov.cn/xinwen/2019-07/15/content_5409694.htm (accessed 19 August 2024).

Vasileiou, K., Barnett, J., Thorpe, S. and Young, T. (2018), "Characterising and justifying sample size sufficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period", *BMC Medical Research Methodology*, Vol. 18, pp. 1-18, doi: 10.1186/s12874-018-0594-7.

Wang, M., Xu, S., Liu, W., Zhang, C., Zhang, X., Wang, L., Liu, J., Zhu, Z., Hu, J., Luo, X. and Wang, W. (2020), "Prevalence and changes of BMI categories in China and related chronic diseases: cross-sectional national health service surveys (NHSSs) from 2013 to 2018", *EClinicalMedicine*, Vol. 26, 100521, doi: 10.1016/j.eclinm.2020.100521.

Xie, H., Veeck, A., Yu, H. and Zhu, H. (2023), "Emotions, perceived knowledge and food behaviors during stressful periods", *British Food Journal*, Vol. 125 No. 9, pp. 3304-3319, doi: 10.1108/bfj-08-2022-0717.

Xu, Q., Wang, J. and Qi, J. (2019), "Intergenerational coresidence and the subjective well-being of older adults in China", *Demographic Research*, Vol. 41, pp. 1347-1372, doi: 10.4054/demres.2019.41.48.

Yan, L.L., Li, C., Zou, S., Li, Y., Gong, E., He, Z., Shao, S., Jin, X., Hua, Y., Gallis, J.A. and Turner, E.L. (2022), "Healthy eating and all-cause mortality among Chinese aged 80 years or older", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 19 No. 1, p. 60, doi: 10.1186/s12966-022-01280-6.

Yang, B., Asche, F. and Li, T. (2022), "Consumer behavior and food prices during the COVID-19 pandemic: evidence from Chinese cities", *Economic Inquiry*, Vol. 60 No. 3, pp. 1437-1460, doi: 10.1111/ecin.13067.

Yuan, Y.Q., Li, F., Wu, H., Wang, Y.C., Chen, J.S., He, G.S., Li, S.G. and Chen, B. (2018), "Evaluation of the validity and reliability of the Chinese healthy eating index", *Nutrients*, Vol. 10 No. 2, p. 114, doi: 10.3390/nu10020114.

Zhang, Y., Wang, J., Zu, Y. and Hu, Q. (2021), "Attitudes of Chinese college students towards aging and living independently in the context of China's modernization: a qualitative study", *Frontiers in Psychology*, Vol. 12, 609736, doi: 10.3389/fpsyg.2021.609736.

Zhou, M., Wang, H., Zeng, X., Yin, P., Zhu, J., Chen, W., Li, X., Wang, L., Wang, L., Liu, Y., Liu, J., Zhang, M., Qi, J., Yu, S., Afshin, A., Gakidou, E., Glenn, S., Krish, V.S., Miller-Petrie, M.K., Mountjoy-Venning, W.C., Mullany, E.C., Redford, S.B., Liu, H., Naghavi, M., Hay, S.I., Murray, C.J.L. and Liang, X. (2019), "Mortality, morbidity, and risk factors in China and its provinces, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017", *The Lancet*, Vol. 394, 10204, pp. 1145-1158, doi: 10.1016/s0140-6736(19)30427-1.

Zhou, S., Ding, X. and Leung, J.T.Y. (2023), "Healthy aging at family mealtimes: associations of clean cooking, protein intake, and dining together with mental health of Chinese older adults amid Covid-19 pandemic", *International Journal of Environmental Research and Public Health*, Vol. 20 No. 3, 1672, doi: 10.3390/ijerph20031672.

**Supplementary material**

The supplementary material for this article can be found online.

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