



Factors Affecting Panic Buying during COVID-19 Outbreak and Strategies: A Scoping Review

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Abstract

Background: This study aimed to assess factors affecting panic buying and strategies to deal with them during COVID-19 with a scoping review.

Method: The review was performed based on Arksey and O'Malley. PubMed, Embase, Scopus, ProQuest, and Science Direct databases were selected to search. All English language full-text articles from Jan 2020 to May 2021 were included. Initially, the titles and abstracts of the retrieved articles were read and screening was accomplished based on the research question. After that, the full text of eligible studies was examined. A third reviewer was resolved disagreements at any stage by a consensus meeting. A self-assessment form was designed for data extraction. The causes of panic buying were assessed as a descriptive study.

Results: The search process returned 23 articles after deletion for complete data extraction and analysis. Through thematic analysis, the factors influencing panic buying were divided into six categories including cognitive, emotional, behavioral, social, and economic factors as well as government action, and finally, the recommended strategies were categorized in two categories included psychosocial and economic.

Conclusion: A holistic view of panic buying's causes allows planners and decision-makers to design categorized strategies beyond the suggested strategies. Increasing customer awareness and monitoring the flow of information through social media and mass media, psychotherapy, counseling, and economic strategies are considered by planners to combat panic buying.

Keywords: Panic buying; COVID-19; Causes; Factors; Strategies

Introduction

The ongoing global crisis of the COVID-19 epidemic has devastated the economy and the health care system and led to unprecedented social and

economic changes in many countries and fear, panic, and uncertainty among a lot of people (1). Restrictions were also a stimulus that had led to a



shift in consumption and uncertainty, and panic buying as an erratic human behavior was formed in responding to uncertainty by many people around the world (2).

Panic buying is a socially unfavorable and herd behavior in which large amounts of basic household goods, essential foodstuffs, drugs, masks, sanitizers, and toilet paper are purchased unconventionally from stores and often stored in homes (3). It occurs when consumers buy suddenly certain types of products, although there is no explicit sign of an imminent deficiency (4). People's ability to make decisions and judgments in unexpected crises is significantly impaired, and buying patterns change due to people's anticipation of a shortage of essential goods, therefore unusual purchases such as panic buying happen (5, 6).

The problem of buying panic at the onset of COVID-19 appeared in almost every country or region affected by this disease. At first, it was reported in the developed cities of China and Italy and quickly spread to many countries and places such as France, Indonesia, Malaysia, the United Kingdom, and the United States (7). This behavior was more severe in low-income and developing countries such as India, Pakistan, Bangladesh, Vietnam, and Iran (8-11). Previous studies demonstrate panic buying has also occurred in past epidemics and natural disasters. The Ebola outbreak in 2012 caused panic buying that led to food shortages in East African countries (12). During the devastating Sandy in 2012 and Arthur storms in 2014 in the United States, panic buying led to the irrational hoarding of mineral water in the two states (13). In 2003, during the outbreak of SARS in China, social panic increased and led to panic buying of drugs and mask in some provinces (14, 15).

Panic buying at any time and place has been associated with adverse consequences. The negative consequences of panic buying are anxiety, fear, panic, confusion, rising prices, and inaccessibility of needed goods to the public (10). This event can cause reduce the access of vulnerable groups such as the elderly or the poor to essential products, and create supply chain disruptions, short-

ages of drugs and preventive health products, increased substandard and falsified medical products, and increased risk of addictive and unusual substance use (16, 17).

The panic buying phenomenon has multi-components factors. Abraham Maslow's hierarchy of needs and survival psychology were used to explain panic-buying behavior, stating that physiological needs, safety needs, social needs, and esteem needs for respect can be factors in causing panic-buying (3). The major factor triggering panic buying during the course of the COVID-19 pandemic was to meet the physiological needs and compete for survival (18). Several researchers looked at this issue from a psychological perspective and factors affecting panic buying recognized the perception of threat, fear of the unknown, and social psychological factors (3, 19, 20).

On the other hand, Dammeyer with a different viewpoint explained that people with less conscientiousness are more likely to have impulsive behaviors, break the rules, and make extra shopping in a disaster situation (21). Defective coping strategies such as maladaptive behaviors to reduce anxiety and control the environment cause panic buying (22). Singh et al. with a sociological perspective stated that a high level of social distrust can motivate people to take individual actions and panic buying, and it causes people to buy more than their essential share and leave nothing for others (23).

Based on the literature review, several factors affect panic buying in crises that need to be identified to manage and provide prevention strategies. A look at the research evidence shows that some researchers, in addition to concentration on a particular factor, have suggested coping strategies with panic buying as recommendations at the end of the articles. According to our research, no review article has been conducted so far that found and categorized all the factors influencing panic buying in articles and, based on the categories, separated the effective coping strategy in all types of documents. Therefore, the scoping review aimed to provide a rapid overview of the documented evidence about all factors affecting panic

buying and strategies to deal with them during the COVID-19 outbreak.

Methods

Framework

A scoping review is a suitable tool to map evidence on a specific subject that determines the scope of coverage of a body of literature and summarizes findings, organizes related key concepts, evaluates the extent of research, and analyzes knowledge gaps (24). This scoping review was guided by Arksey and O'Malley's framework that included five phases. For the first and the second phase, the research question was identified, and the relevant studies were searched, respectively. The selection of studies and charting the data were performed in the third and fourth phases, respectively. The fifth phase included organizing, summarizing, and reporting the findings (25).

This study was conducted according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)(26). In this scoping review, the quality appraisal did not perform under the framework provided by Joanna Briggs Institute Methodology Guide for Scope of Reviews (27).

Search strategy

A literature search was conducted in PubMed, EMBASE, Scopus, ProQuest, and Science Direct databases. The search was limited to studies published between Jan 2020 to May 2021. The articles in Google scholar were included, too. The extracted article's references were assessed to assure for getting all of the related articles. The key terms of search strategy were the combination of "COVID-19" and "Panic buying".

Inclusion and exclusion criteria

All the full-text English language studies that addressed the causes of panic buying in the COVID-19 outbreak were included. Given the study's goals, the time limitation (Jan 2020 to May 2021) was considered. The letter to editors,

perspective, opinion, and commentary studies, and systematic review studies as well as the gray literature that focused on any affecting factors on panic buying were included as well. The studies that assessed the panic buying for other crises were excluded, too.

Data selection and extraction

All citations were imported into Endnote 8.0. After that, duplicate articles were removed. To assess the relevant studies, a two-stage screening was performed. For the first stage, the titles, as well as the abstracts of retrieved articles, were screened against the research question. After that, the full text of eligible studies was examined. All the authors were taken part in the second screening stage and the full text of eligible studies was reviewed according to the author's field of expertise. Finally, reference lists and citations of eligible articles were checked manually for additional relevant studies. A third reviewer was resolved disagreements at any stage by a consensus meeting. A self-assessment form was designed for data extraction. Information retrieved for each of the selected articles was compiled including the first author, publication date, country, study design, associated factors, and preventive strategies.

Data synthesis and analysis

This study was a descriptive analysis and thematic scoping review of the characteristics of the included literature. Publication date, country, study design, associated factors, and preventive strategies were described. The literature was categorized into letter to editors, perspective, opinion, commentary studies, gray literature, and systematic review studies. All of the factors affecting panic buying and coping strategies of dealing with them in the retrieved articles were considered and classified into tailored themes.

Results

Overall, 650 articles were identified based on the literature search (46 from PubMed, 42 from EMBASE, 70 from Scopus, 216 from ProQuest,

175 from Science Direct, and 101 from other sources). Overall, 351 articles were duplicated. After removing them, 42 articles were screened for eligibility. Finally, 23 articles were included in

the study. The selection process is summarized in Fig. 1 based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart.

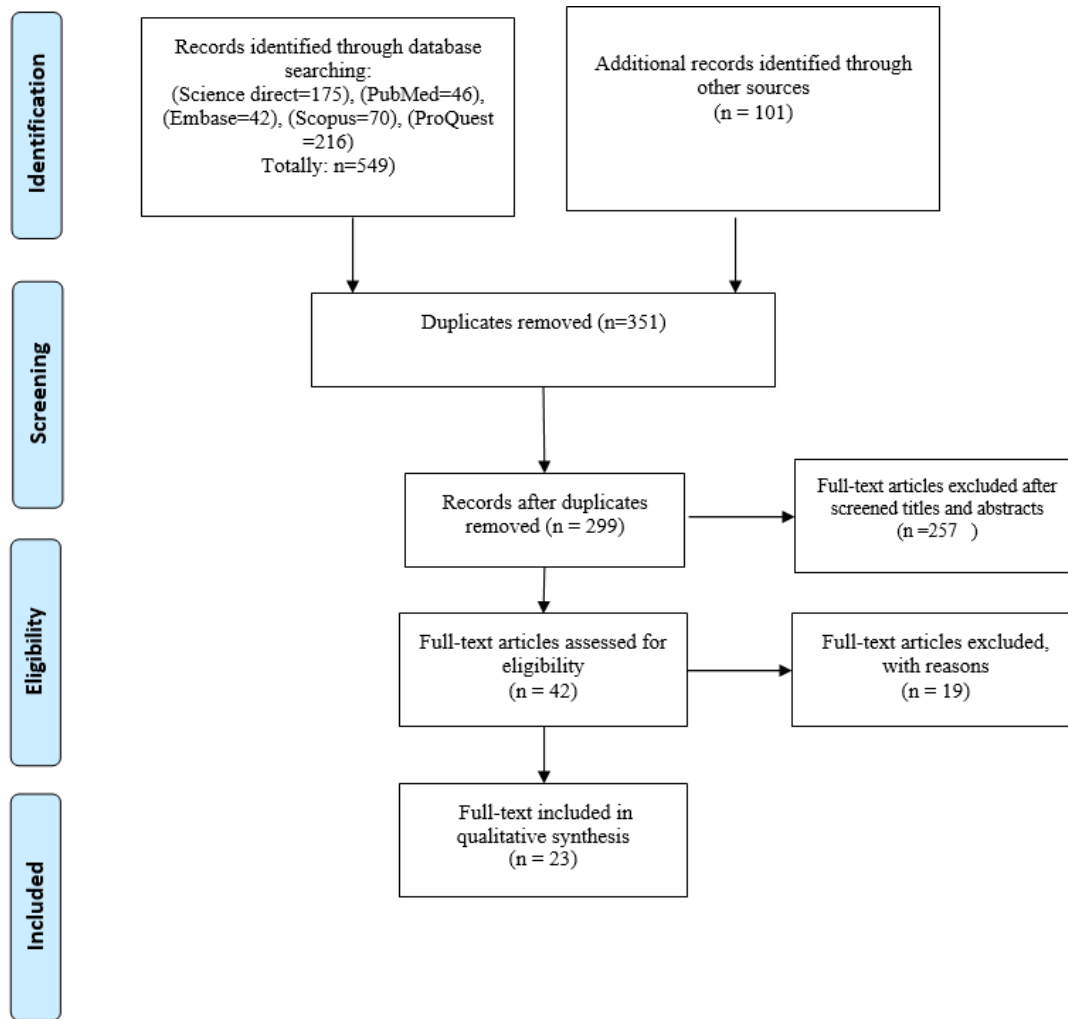


Fig. 1: PRISMA flowchart of study selection process

Characteristics of the selected articles

The selected studies were culturally and geographically diverse, including 18 studies from Asia, 3 studies from Europe, one study from New Zealand, one study from North America, and one study from South America. Available resources published between 2020 and 2021. In Table 1, there are causes and strategies derived from selected studies. With a holistic view of the themes derived from the reviewed articles, the

causes of panic buying are highlighted at four levels: individual, social, economic, and government levels. By dividing the individual level into three cognitive, emotional, and behavioral factors, we were able to achieve six categories of reasons to panic buying, namely cognitive, emotional, behavioral, social, and economic factors, as well as government actions (Fig. 2). According to Table 1, most articles emphasized the impact of multiple factors on panic buying behavior.

Moreover, strategies for controlling panic buying have been proposed in 13 articles, which we have

classified into two groups as psychosocial and economic factors (Fig. 2).

Table 1: Characteristics of the selected studies

<i>Author/ year</i>	<i>Country</i>	<i>Causes</i>	<i>Catego- ries</i>	<i>Preventive strategies</i>
Arafat et al. (28)	Bangladesh	-Perceived scarcity effect -Perceived sense of losing control over the environment - Social learning - Perceived insecurity -Instinctual behavior -Infidelity toward the ruling government -Influences of media	Social, cognitive, behavioral, factors, government action,	Null
Arafat et al. (10)	Bangladesh	-Rumor of danger -Curfew -Policy ban - Uncertainty -Anticipation of an impending lockdown -Increased demand -Anticipation of price hike -Anticipation of short supply	Government action, cognitive, economic, and social factors	-Raising awareness by Government -Government's action to control -Selling goods at a lower price by the Government -Formulation of the monitoring team -Punishment to maleficent sellers -Dissemination of stock status to the general people -Assurance of stocks
Arafat et al. (29)	Bangladesh	-Increased demand -Importance of the product -Anticipation of price hike -Rumor -Safety-seeking behavior -Uncertainty, anxiety reduction -Taking control -Social learning -Lack of trust -Government action -Experience	economic factors, government action, emotional factors, social factors	Null
Barnes et al. (4)	Italy	-Lack of perceived control -Fear of missing out -Normative influence -Word of mouth -Observational learning -Impeding effects of trust in the community government - Product scarcity	Social, emotional factors, cognitive factors	- Providing specific details of the measures for allaying the fears and reducing anxiety among citizens -Ready to recognize early warning signals of a pandemic by retailers such as supermarkets
Dilaysu ÇINAR, (30)	Turkey	-perceived scarcity -High hedonic shopping motivation	Cognitive factors, economic	Null

Dulam et al. (31)	Japan	-Consumer behavior	factors Behavioral factors	-Strategies to control the excess demand such as limiting sales per person
Gazali (32)	Malaysia	-Herd behavior -Social media exposure -Anxiety sensitivity - Price instability - Product unavailability	Social factors, emotional factors, economic factors	- Ensuring that equilibrium between demand and supply during the crisis - Ensuring price stability especially for the necessary goods
Grace Chua et al. (22)	Singapore	-Perceived scarcity of products -Consumers' anticipation of regret	Cognitive and emotional factors	-Minimizing cues to action of consumers -Reducing the consumer's perception of scarcity -Refocusing consumer's attention and anticipation of regret away from panic buying products towards more productive and effective preparation methods
Hall et al. (33)	New Zealand	-Shifts in both consumer demand and availability of supply	Economic factors	-Economic recovery initiatives -Disaster preparedness
Harahap et al. (34)	Indonesia	-Consumption shifts -Psychological factors -Environmental factors -Regulation -Trust - Influence of social media	Social, emotional factors, government action	-Providing quality sources of information to avoid rumors and falsehood
Islam et al. (35)	China, India, and Pakistan	-Quantity Scarcity -Time Scarcity -Increasing perceived arousal - Intensifying the relationship between scarcity messages and perceived arousal by social media	Social and cognitive, economic factors	-Planning to deal with the negative effects of panic buying by brand managers and policy-makers -Informing supermarkets or retailers of the short-term and long-term consequences of storage and hoarding, including shortages of materials and goods, reduced revenue, and unpredictable sales.
Jahagirdar (36)	India	-Fear factor -Uncertainty about the future	Cognitive factors	Null
Kum Fai Yuen et al (3)	Singapore, china	-Perception -Fear of the Unknown -Coping Behavior -Social influence - Social trust	Behavioral, cognitive factors, and emotional factors	Null
Kar et al. (37)	India	-Cognitive distortions -Maladaptive behaviors -Social learning	Cognitive, behavioral, and social factors	-An adequate awareness, -Online group CBT
Kostev	Germa-	-Fear	cognitive,	Null

& Lauterbach (38)	ny	-Lack of information -Wrong information -A way of coping with a stressful and steps to protect self and family -Conflict between the desire to maintain regular routines and the uncertainty of the permanence of the epidemic.	emotional factors, and behavioral factors	
Lins & Aquino (39)	Brazil	-Risk perception	cognitive factors	-Awareness of consumers, healthcare professionals, and public decision-makers about the impact of negative emotions on panic buying - Developing interventions to reduce the incidence of emotional and economic distress
Li. (40)	USA	-Socio-psychological environment - Mass media and social media role	Social factors	Null
Naeem (41)	UK	-Consumer values -Consumer socialization -Social media role	Cognitive and social factors	Null
Rajkumar (42)	India	- Increased extraversion - Neuroticism -Low conscientiousness and openness - Need to belong -Need for safety or reassurance -Anxiety or worry -Reduced adherence to social distancing -Conservative attitudes -Local severity of the pandemic -Perception of scarcity or of an increase in price -Lack of trust in public authorities -Misinformation	Social, cognitive, emotional factors and government action	- Attempts based on the biomedical and the social sciences
Roy S & Chakraborty C (43)	Mohali	- Fear and uncertainties - Fallacious thinking, rumors and survivalist psychological	Emotional, cognitive, and social factors	Null
Sherman et al. (44)	United Arab Emirates	- Perceived risk	Cognitive factors	-Directing information flows -Ensuring well-developed supply chain or food security plans in the country. -Continuous delivery services by supermarkets

Wang & Na (45)	China	-Herd effect -The desire for control	Social and cognitive factors	-Providing clear and timely information to stockpile food and household essentials to citizens. -Public education to reduce panic buying incentives. -A targeted policy by focusing on females and for fresh foods
Yaping Zhang et al. (46)	China	-Psychological stress -Sharing information on panic buying of food	Social and cognitive factors	Null

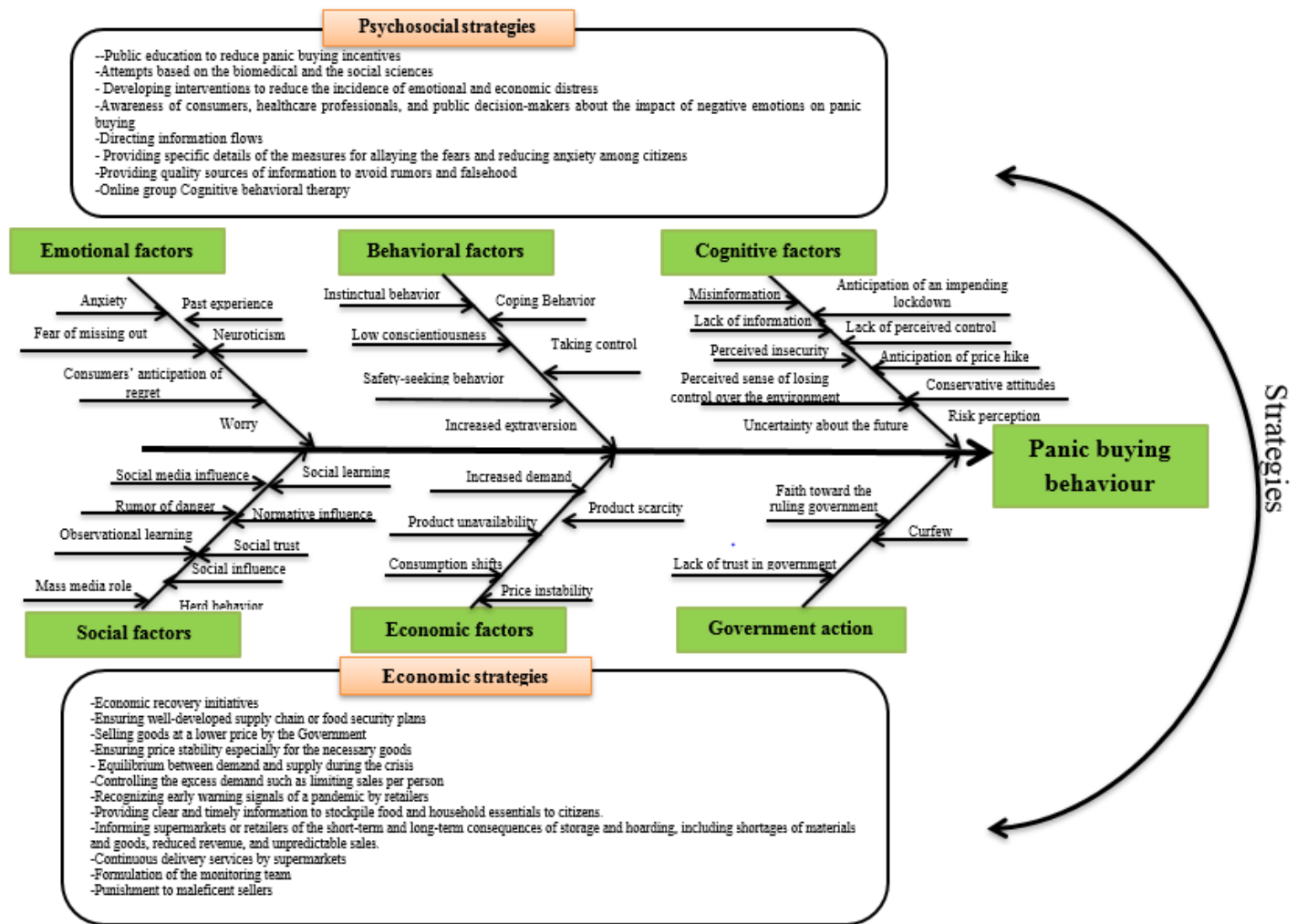


Fig. 2: Fishbone diagram for the causes of panic buying and strategies

Discussion

Panic buying was an unforeseen issue in the world faced with COVID-19 disease, and few empirical studies have been done on the factors that affect it. Therefore, the present study aimed

to investigate effective factors on panic buying behavior during the COVID-19 outbreak through a scoping review of past studies. After that, by searching in selected studies, the proposed preventive strategies were selected and presented in this study. The main reasons for

panic buying are individual (cognitive, emotional, and behavioral), social, and economic factors as well as government action. In addition, we divided preventive strategies in reviewed studies into two categories: psychosocial strategies and economic strategies.

During the COVID-19 pandemic, one of the panic buying's causes was individual factors that were divided into three categories of emotional, cognitive and behavioral factors based on the themes extracted from the reviewed studies. These factors determine the psychological and psycho-motor characteristics of individuals that lead to panic-buying behavior. The decision-making process of the consumer that leads to panic purchasing of the product is formed based on his feelings, attitudes, and behaviors (31). Unpleasant emotions such as fear, worry, anxiety, regret, and neurosis combined with the distressing experiences of lack of necessities in previous crises can motivate people to panic buying. Roy confirmed this finding in a study that negative emotions such as fear and anger play a central role in customers' decision-making to panic buying and hoarding (43).

The category of behavioral factors emphasizes behaviors to control and adapt to the status quo and include safety-seeking behaviors that lead people towards panic buying in this precarious situation. Behavioral manifestations such as low conscientiousness and increased extraversion in stressful situations are other factors affecting the purchase of panic and hoarding by individuals. Panic buying is a coping behavior that people do after being exposed to a lot and sudden information about COVID-19 (44). In this regard, people with less conscientiousness are more likely to misjudge, have impulsive behaviors, break the rules, and make extra shopping in a distressing situation (21).

Cognitive factors of panic buying are rooted in information problems, negative attitudes, and beliefs, perceived insecurity, perceived lack of necessary materials, perceived losing control over the situation and predicting famine and rising prices. In line with this, cognitive function is directly related to thinking style, perceived risk con-

trol, perceived authenticity, and ultimately panic buying behavior (47-49). Panic shopping is related to the need for control, the belief that it is smart, and the urge to minimize the number of visits to grocery stores (50).

Social factors are important determinants of customers' decision to panic buying and lead to herd behavior and bulk purchasing in uncertain and stressful situations. Social influence in the panic buying behavior refers to normative influence, and observational learning (51). Normative influence can be exerted through peer pressure through word-of-mouth the constant advice from significant referents to stockpile (52). Observational learning describes an individual who observes the choices made by others and believes that the majority has a better assessment of the situation and panic buying is the optimum choice (3, 53). In addition, the spread of rumors such as stock-out situations with social media, online news, radio, and chat applications can influence individuals to do panic buying (54). Social distrust also causes people to act individually and the fear that others will buy more than their share and leave them with nothing causes panic-buying behavior (55). Some scholars explained in line with this finding that panic buying behavior is influenced by social approval and influence, social learning, media content, and the tendency to copy the behaviors of others (20, 56).

Product unavailability and scarcity, unstable prices, and increased demand were economic factors affecting panic buying during the COVID-19 outbreak. At the beginning of the COVID-19 outbreak, the rarity of the product and the increase in the price of essential products, which was the result of panic buying, caused to increase in demand and more panic buying (30). Following the concept of consumption shift, the COVID-19 pandemic has also changed consumer behavior and customer behavior has shifted to compulsive hoarding, panic buying, and even shop raiding (8).

Government actions are another factor influencing panic buying. Sometimes in times of crisis, people believe that the government will not be able to control the market and support custom-

ers. Lack of trust and anticipation of lack of resources can be a source of panic buying. The panic buying was a result of hidden distrust toward government measures in previous disasters (57). Sometimes curfews caused people to start panic buying for providing daily necessities in the remaining hours. In line with this finding, at the beginning of the COVID-19 outbreak sometimes people traveled for miles out before starting curfews and rushed to stock the grocery, and was occurred panic buying (58).

Based on the results, various strategies have been proposed in selected studies. These strategies were divided into two categories in the present study: psychosocial and economic. Suggested strategies to the government and its affiliated organizations can significantly reduce the likelihood of panic buying. The first step in preventing panic buying is training to raise customer awareness and monitor the flow of information through social media and mass media. Psychotherapy and counseling strategies should also be considered to manage clients' anxiety and fear. Of course, economic strategies and reforms also play an important role to manage panic buying behavior. Implementing policies and determining appropriate strategies for managing panic buying is essential and should be anticipated (59).

The first limitation was that only articles in the English language were included in the study. Although considering all types of published literature except gray literature was the strength of the study, the quality of the selected studies did not assess. Addressing the recommended strategies in panic buying was the secondary purpose of the present study. Therefore, it was not in the search strategy. Focusing on panic buying prevention strategies in another review can identify more dimensions of coping strategies.

Conclusion

Multifaceted factors affect panic buying, which in turn requires the design of various strategies to prevent and deal with it. From a holistic view, this article divides the reasons for buying panic

into six categories, which shows that to prevent panic buying, planners and decision-makers must pay attention to all aspects and factors affecting it. Reporting strategies are not the main concern of researchers, and only at the end of the study, strategies are suggested. Since it is important to design strategies specifically to combat panic buying, the guidelines are designed that categorize strategies to address each of the reasons.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Competing interests

The authors declare that there is no conflict of interest.

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