

# Panic buying behavior and Covid-19 handling knowledge of health workers and non-health workers in Bali

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## ABSTRACT

Panic buying occurs when a group of people buys an unreasonable amount of product in anticipation of, or after, a disaster or perceived disaster, like a pandemic situation. This behavior that occurred in the early days of the Covid-19 pandemic led to anxiety and scarcity of goods, especially medical equipment related to Covid-19 handling. The lesson from the phenomenon indicates that necessary to know the factors that influence the emergence of panic buying behavior. Therefore, this study aimed to determine the correlation between the demographic factor and knowledge about Covid-19 handling toward panic buying behavior. The online cross-sectional survey was carried out using a questionnaire that had passed a one-shot validity and reliability test. A total of 762 samples were taken with the purposive sampling technique. Descriptive and bivariate tests analyzed the data. There was a significant difference between the health workers and the non-health worker group ( $P < 0.001$ ) in knowledge about Covid-19 handling and a significant correlation between education and panic buying behavior ( $P = 0.028$ ). The results of this study show that behavior that occurs during a pandemic correlated with education level. Respondents with primary and secondary education have a 1.5 times greater tendency to have panic buying behavior than respondents with higher education. A holistic study is still needed to find efforts to increase community resilience in facing crises.

**Keywords:** Bali community, Cross-sectional, Pandemic, Panic buying

## Introduction

The COVID-19 pandemic has had a wide-ranging effect on people's lives in many countries [1, 2] and also in Indonesia [3]. The President of the Republic of Indonesia declared Covid-19 to be in the Emergency Response stage on March 17, 2020 [4]. Coronaviruses are a family of viruses that can cause various symptoms like pneumonia, fever, breathing difficulty, and lung infections. Covid-19 is easy to transmit. It can even occur in people

without symptoms [5]. Therefore, the government imposes various social restrictions to encounter Covid-19 transmission.

The very high possibility of transmission can cause anxiety. Mental health can be affected by additional impacts of the Covid-19 pandemic, such as isolation, social distancing, self-quarantine, travel restrictions, and the spread of bad news on social media [6]. Anxiety that affects a larger group of people can lead to panic buying. Available resources cannot meet the existing demand when panic buying occurs. Anxiety can also cause limitations in activities of daily living, avoidance behaviors leading to limited socialization, and self-medication behaviors. If this persists, mental health problems not only affect decision-making abilities but can also have long-term adverse effects on overall well-being [7]. It is important to address mental health disorders, especially in a pandemic.

Panic buying is the behavior when people buy goods in excess and even hoard them for fear of running out [8]. Local news media [9] reported that panic buying occurred after the coronavirus outbreak. Indonesian health services are facing a difficult situation during several periods of increasing COVID-19 cases related to the

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scarcity of available facilities and infrastructure. Scarcity forces health workers to choose the allocation of available facilities. That condition raises ethical problems that exacerbate their duties and cause mental disorders in society [2, 10]. This incident does not only happen in Indonesia, but many countries also are not ready to face the pandemic, and the health crisis is happening globally [1, 2]. The World Health Organization has warned that disruptions to the global supply of personal protective equipment (PPE) caused by increasing demand, panic buying, stockpiling, and misuse pose new risks [11, 12]. Panic buying that occurs during a crisis has many negative effects [3, 13-15]. The shortage crisis can lead to price increases in consumer goods [16]. In comparison, products that have been purchased in large quantities may be wasted and cause a lot of losses [15]. Thus, it is necessary to make continuous improvements to increase community resilience in facing the crisis that might happen in the future.

There are several stages for the response of individuals or populations during a pandemic. Namely, fear, anxiety, panic, anger, acceptance, and resolution exist. There was a lot of false and misleading information circulating at the beginning of the pandemic, resulting in fear [1]. Fear leads to anxiety that will affect behavior. An individual will try to reduce anxiety by reducing the risks that may occur [16]. Individual efforts to reduce risk during a crisis can be manifest through panic buying behavior. Islam [14] stated there is a difference in people's behavior regarding impulsive shopping in different countries. Behavior is affected by many factors [17]. Therefore, this study aims to determine factors related to panic buying behavior in the Bali community. There are gender, age, education, occupation, and knowledge about Covid-19 handling.

## Materials and Methods

### Research design

A valid and reliable questionnaire is used to conduct a cross-sectional study to determine respondents' knowledge about Covid-19 handling and panic buying behavior. The study was carried out from March to May 2020, involving respondents from all over the regency in Bali Province. The provision of informed consent and data collection was conducted online with the Google Form® application. The independent variables in this study were the level of knowledge related to Covid-19 handling and demographic factors such as gender, age, education, and occupation. The dependent variable in this study is panic buying behavior.

### Population, sample, and sampling technique

Respondents are residents of Bali Province. The purposive sampling technique is applied to determine the samples. The respondent must have a Bali Province ID card, be at least 18 years old, and be willing to complete a questionnaire. As many as 363 health workers and 363 non-health-workers joined the study. The number of samples was calculated according to Lemeshow *et al.* [18] (Eq. 1).

$$n = \frac{Z_1^2 - \frac{\alpha}{2} \cdot p(1-p)}{d^2} \quad (1)$$

n: minimum sample quantity

$Z_1^2 - \frac{\alpha}{2}$ : degree of confidence (1,96)

p: population proportion (0,5)

d: the level of precision to the population (0,05)

### Instruments

The research instrument is composed based on literature about Covid-19 and panic buying. Questionnaires regarding the level of knowledge about handling Covid-19 and panic buying behavior were tested using the one-shot technique. The questionnaire is valid if it has  $r \text{ count} > r \text{ table}$  ( $r \text{ count} > 0.361$ ). The reliability test was carried out on valid questions. The instrument is reliable if it has a Cronbach Alpha value  $> 0.60$ .

### Data analysis

The respondents' knowledge and behavior level were coded according to **Table 1** and then analyzed using descriptive and bivariate statistical tests. Respondents' age is divided into 2 groups according to the regulation of the Minister of Health of the Republic of Indonesia No. 25 of 2016. Respondent's occupations are divided into two groups, namely health-worker and non-health-worker. The Chi-Square test was used to determine the correlation between gender, age, education, occupation, and knowledge about Covid-19 handling toward behavior. The respondent's knowledge level and behavior between groups were compared using the Mann-Whitney test. Statistical tests were conducted using the SPSS 23 program with 95% confidence.

Table 1. The data code

Score (%)	Classification	Code
<b>Knowledge</b>		
$0 < X > 60$	low	1
$60 < X > 80$	good	2
$80 < X > 100$	very good	3
<b>Behavior</b>		
$>50\%$	Panic buying	2
$\leq 50\%$	Not panic buying	1

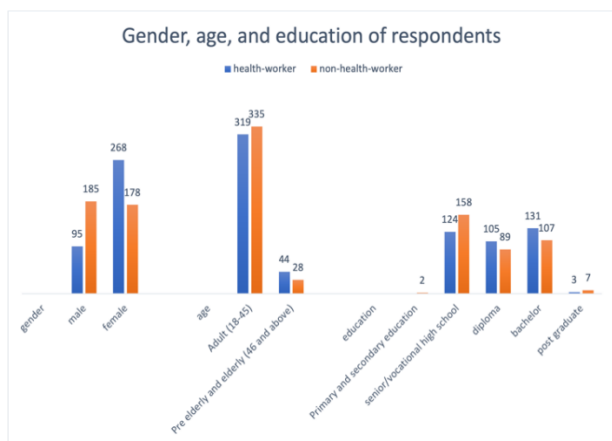
## Results and Discussion

Panic buying became a broad phenomenon at the international level in February and March 2020 [19]. Panic buying is an excessive worry that encourages people to buy goods in excess and even hoard them for fear of running out. A person's psychological reaction will be provoked when a product is estimated to be inaccessible in the future [16]. Panic buying or "fear stockpiling" can lead to stock shortages regardless of whether the shortage situation is real or perceived.

The research started with a literature study and composing research instruments. As many as 30 respondents were involved in

examining the validity and reliability of the questionnaire. The questionnaire was valid through the Pearson Product Moment correlation test with an  $r$  count  $> 0.361$ . The knowledge level questionnaire about handling Covid-19 and the panic buying behavior questionnaire were reliable, with Cronbach Alpha values of 0.805 and 0.745, respectively.

A total of 726 samples were collected for the two groups (health-worker and non-health-group). **Figure 1** demonstrates the demographic profiles developed for them.



**Figure 1.** Gender, age, and education of respondents.

Most respondents already knew about Covid-19 handling, and 17,63% of respondents showed panic buying behavior (**Table 2**). The panic buying behavior shown by respondents in this study is

the purchase of masks, multivitamins, daily necessities, and other necessities to prevent Covid-19. Panic buying occurs in items considered essential and indispensable in bad conditions [15, 20]. The results of the study are in line with the research of Bhagavathula *et al.* [21] and Giao *et al.* [22].

Covid-19 is a disease that was not widely understood when the data collecting. The rapid development of information creates confusion, especially for people with low health literacy. The Mann-Whitney test significantly showed the knowledge level of health workers and non-health workers ( $P < 0.001$ ). Nevertheless, the two groups' behavior is not different statistically ( $P = 0,723$ ). Health workers have higher knowledge regarding Covid-19 handling. The government has conducted various training to prepare health workers to face the pandemic. Besides that, health workers already have an adequate medical knowledge base; thus, they quickly figure out information about Covid-19 [23]. The existence of health workers with a low knowledge level may be due to the uneven distribution of information. Health workers that work for the government or hospitals tend to receive information more quickly compared to health-worker that work in private health services in the community. Besides that, Covid-19 is a newly recognized disease, so there is still much uncertainty about it.

There is no significant correlation between gender, age, occupation, and knowledge regarding Covid-19 handling toward panic buying behavior. Meanwhile, the education level of respondents and panic buying behavior correlate significantly (**Table 3**).

**Table 2.** Respondent's knowledge and behavior

Classification	Health worker		Non-Health worker	
	n	n/total respondents in a group	n	n/total respondents in a group
<b>Knowledge</b>				
very good	71	19.56	39	10.74
good	250	68.87	271	74.66
low	42	11.57	53	14.6
<b>Total</b>	363	100	363	100
<b>Behavior</b>				
Panic buying	63	17,36	65	17,91
Not panic buying	300	82,64	298	82,09
<b>Total</b>	363	100	363	100

**Table 3.** Correlation between variables in the study

Variable	Variable category	Panic buying		Not panic buying		Σ (Total for each variable category)	P-value (CI 95%) Chi-Square test
		n	n / Σ (%)	n	n / Σ (%)		
Gender	Male	44	15.7	236	84.3	280	0.295
	Female	85	19.1	361	80.9		
<b>Total</b>		129	17.8	597	82.2		
Education	Primary and secondary education	62	21.8	222	78.2	284	0.028*
	Higher education	67	15.2	375	84.8		
<b>Total</b>		129	17.8	597	82.2		
Age	adult	117	17.9	537	82.1	654	0.924

	Pre-elderly and elderly	12	16.7	60	83.3	72	
<b>Total</b>		129	17.8	597	82.2		
Occupation	Health worker	64	17.6	299	82.4	363	1.000
	Non-health worker	65	17.9	298	82.1	363	
<b>Total</b>		129	17.8	597	82.2		
Knowledge	Low	16	16.8	79	83.2	95	0.179
	Good	100	19.2	421	80.8	521	
	Very good	13	11.8	97	88.2	110	
	<b>Total</b>	129	17.8	597	82.2		

\*Significant value with OR = 1.563; min = 1.066; max = 2.293

According to Yuen *et al.* [24], the causes of panic buying can be categorized into four main themes: (1) individual perceptions of the threat of crisis and product scarcity, (2) fear of the unknown caused by emotions and uncertainty, (3) coping behavior, and (4) social psychological factors that consider buying behavior and the dynamics of the individual's social network. The author uses the point of view to explain the research result.

### *Individual perceptions of the threat of crisis and product scarcity*

People will try to measure the susceptibility and severity that may occur according to their perception of crises [15-17, 25]. The Indonesian government makes various efforts to control the spread of Covid-19, like in many other countries. One of them is to limit the movement and crowds of people [26]. The government limits the operational time of non-vital business fields so that people feel a Limited Time Scarcity (LTS). The number of reports on social media regarding the vacancies of several products on the market makes people feel the existence of Limited Quantity Scarcity (LQS). The condition makes people feel competitive in shopping. That feeling makes perceived arousal increase [14].

Li *et al.* [27] also stated that in certain circumstances (e.g.: a supply shortage) the spread of scarcity rumors will easily lead to large-scale panic buying.

This action is partially mediated by anticipatory reactions to "feelings of regret" in the future [15]. This situation also happened in Bali and could be why some respondents showed panic buying behavior.

### *Fear of the unknown caused by emotions and uncertainty*

The panic caused by fears of stock shortages in an uncertain environment prompted rush buying on a large scale [27]. One's wisdom can be a mediating factor between feelings of fear and anxiety toward panic buying behavior. Adaptation ability is needed to be resilient in the era of rapid change, especially in times of crisis. To do it rationally requires the ability to judge logically based on evidence in other languages, and the ability to think critically is needed [16, 28]. A high level of education can affect a person's ability to think critically. The study result shows

that knowledge regarding COVID-19 handling has no significant effect on panic buying behavior. Nevertheless, the respondent's education level affects panic buying behavior significantly. Respondents with primary and secondary education showed a tendency to panic buying behavior 1.5 times greater than respondents with higher education (**Table 3**). Resilience in times of crisis requires the ability to master new skills and apply knowledge effectively according to ongoing conditions [28]. Lindenmeier *et al.* [29] also stated that cognitive constructs influence panic buying behavior more than affective constructs. Wang [13] and Zhang and Zhou [25] stated that demographic factors are important aspects that contribute to aspects of consumer behavior. There are many demographic aspects, including education, income, online store shopping, gender, and professions in medical-related fields. According to Ventriglio *et al.* [30], Khan *et al.* [31], and Oppenheim *et al.* [32], a person's knowledge can influence perceptions and behavior. The more educated a person is and the better their health literacy, the lower the level of fear and psychological unrest they experience, thereby reducing hoarding needs [13].

Uncertainty and lack of knowledge about COVID-19 are a stressors during the pandemic [33]. Despite working as a health worker, the uncertainty of information about this new disease is quite high. This research also shows that there are still health workers who have a low level of knowledge about Covid-19. It is suspected that other factors have an intense influence on the behavior of health workers in Bali. The risk of transmission is higher for medical staff [7, 22, 34], and health workers must take stricter protective measures. They need to keep working and serving patients.

The increase in working hours, the lack of medical personnel, and the increase in the number of patients result in a high workload and become one of the stressors during the pandemic for health workers [33]. Health workers are also vulnerable to mental health problems – worry, fear, feelings of bereavement, and trauma [7]. Wang [13] also stated that the possibility of someone contracting Covid-19 affects rational hoarding behavior.

Government distrust can affect the emotions and uncertainty felt by the community [14, 15]. Islam [14] states that India shows a low level of impulsive buying compared to other countries in the study. Indian culture and government trust at that time contributed to the relatively low incidence of panic buying.

A problem will be responded differently by people with different cultures [35]. The research result also shows the same condition. The Bali provincial government involves "Desa adat" in the Covid-19 mitigation process. "Desa adat" is a social system that binds Balinese people based on tradition, so most Balinese people tend to obey government recommendations. It can explain why most of the respondents did not show panic buying behavior in this study.

Trust and social norms can be built by social institutions that function well in a society, these beliefs and social norms can ultimately form better collaboration within the community [35].

### *Coping behavior*

The pandemic has the potential to cause mass trauma because it affects a wide system of society [36]. According to Islam [14], compulsive purchases are made by consumers during a crisis mainly to reduce psychological stress and anxiety. Coping strategies are needed to face the crisis [3, 20].

### *Social psychological factors that consider buying behavior and the dynamics of the individual's social network*

According to Puspitasari [37] and Motamed-Jahromi *et al.* [38], panic is triggered by psychological factors which usually occur because the public receives unclear information. The previous studies found that ambiguity in information processing and resultant consumer behavior is related [16]. Huge information circulating in the community regarding the extraordinary events. Confusion of available information regarding Covid-19 has led to panic buying. Individuals generally experience difficulties and anxiety related to this uncertainty [14, 39]. Psychological stress affects respondents' reported concerns about Covid-19 and their panic buying behavior during the Covid-19 pandemic [25].

Spreading rumors about COVID-19 through social networking platforms contributes to increased feelings of stress [33]. Social media use increases during the pandemic because people try to maintain contact with friends and family during social distancing. But pictures of product vacancies on social media can increase anxiety [14]. The proportion of negative information, as well as the frequency of seeking information related to COVID-19, have an impact on a person's perception of the risks [40].

Kim and Florack [41] also stated that those who frequently engage in social interactions, especially in conversations related to Covid-19, reported a general decrease in self-confidence. Self-confidence mediates the effect of accelerating social interaction on panic buying. Brennen *et al.* [42] stated that 16% of misinformation about Covid-19 was found on social media platforms. Sensible media coverage will help overcome these challenges [23]. The role of relevant parties in mass media is crucial to maintaining mental stability during the pandemic. Thus, the media plays an important role in preventing panic buying and limiting rumors [43, 44].

External stimuli also affect a person's behavior. Consumers are prone to think that others know better and are wiser in analyzing situations. During a crisis or when they do not have enough information, consumers tend to imitate the behavior of others they see [3, 16], particularly the behavior of most people [13, 15]. Still, the influence of external stimuli on behavior is mediated by individual cognitive states. Perceived arousal is influenced by motivations, cognitive feelings, and information processing [14]. Some social and individual factors affect panic buying behavior. Variables related to external stimuli were not included in the study, creating this study's weakness. Nevertheless, the research has an advantage because the data was taken at the beginning of the pandemic. So, the data can show the natural conditions that occurred at that time.

### Conclusion

Balinese people have good knowledge about handling Covid-19. Only a minority of respondents show panic buying behavior. Education level influences the panic buying behavior of Balinese people. Nevertheless, from the literature study, it is known that behavior is affected by many factors. Comprehensive research is still needed in various places with different cultures to provide an overview of the panic buying phenomenon. Accordingly, policy maker can take evident and precise actions for each region and culture to deal with or prevent this phenomenon in the future.

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