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KNOWLEDGE, ATTITUDES, AND BEHAVIOR OF THE COMMUNITY IN USING SUPPLEMENTS DURING THE COVID-19 PANDEMIC

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ABSTRACT
The Covid-19 pandemic has been responded to various attitudes and behaviors related to its prevention. Understanding certain information makes a person make the right decision. Misunderstanding the improvement of the immunity system and prevention of COVID-19 may lead to inappropriate attitudes and behaviors in using supplements in society. This study aims to describe the level of knowledge and attitudes toward using health supplements and the consumption of health supplements during the Covid-19 pandemic. The research design is a cross-sectional study using primary data based on data collection by questionnaire. The research subjects were visitors of Jamsaren and Riyadh pharmacies in September 2020 who were more than 17 years old, could read and write, and were willing to be respondents. Knowledge is assessed by each correct answer marked 1, and then the total is compared with the total score multiplied by 100%. The level of knowledge is classified based on the score obtained; poor knowledge (score <70) and good (>70). Attitudes are classified into panic and non-panic. Behavior was analyzed descriptively. The results on 132 subjects showed that most of the respondents (78%) still had less knowledge of using health supplements to prevent Covid-19. The Chi-Square test results obtained a p-value of 0.312 ($p > 0.05$), meaning no significant difference in knowledgeable or good knowledge in respondents' responses. The attitude variable affects the respondent's behavior, as evidenced by the p-value of 0.008 ($p < 0.05$). The predominant health supplement is vitamin C from pharmacies on their initiative.

Keywords: Covid-19; Supplements; Knowledge; Attitudes; Behavior

1. INTRODUCTION

Since it was first reported in Indonesia, Covid-19 cases have increased and reached 1,386,556 positive confirmed cases on 8 March 2021. The case fatality rate or death rate due to Covid-19 is relatively high; 6.71% globally and 10.24% in Indonesia (Covid19.go.id, 2021). Risk factors that aggravate clinical manifestations of Covid-19 infection are males, obesity, smokers, and the presence of comorbidities (cardiovascular, respiratory, and diabetes mellitus). The government has implemented various policies to prevent the spread of Covid-19. The application of the new normal era urges people to get used to wearing masks, washing hands, social distancing, avoiding crowds, and implementing a healthy lifestyle to increase immunity (Mahardhani, 2020).

Misunderstanding how to prevent Covid-19 potentially causes errors in attitude and behavior. Several studies stated that knowledge positively correlates with people's attitudes and behavior in dealing with Covid-19 (Masoud et al., 2021; Sujarwoto et al., 2022). Individuals who understand certain information tend to behave and make the right decisions (Linawati et al., 2021). Government notices regarding the purchase of Chloroquine and Favipiravir as Covid drugs have received mixed responses from the public. Many people buy Chloroquine freely for storage or

Covid-19 prevention (Ikawati, 2020). Chloroquine, known as an antimalarial drug, is a drug to treat Covid-19 (Smith et al., 2020).

In addition, zinc supplements and other antioxidants such as vitamins A, C, and E boost the immune system. A study by Prasad (2014) stated that zinc has antioxidant and anti-inflammatory effects mediated by NF-κB signals. Several guidelines for handling Covid-19 state that vitamin and mineral supplements such as zinc, vitamin C, vitamin A, and vitamin D are crucial in helping to maintain the balance of the body's immune system (de Faria Coelho-Ravagnani et al., 2021).

An observational study in the United Kingdom (UK) reported that 175,652 out of a total sample of 327,720 people used supplements during the pandemic, including probiotics, omega-3, multivitamins, vitamins C, D, and zinc (Kingsland, 2020). Antioxidant supplements, such as vitamin C, are widely purchased and consumed by the public to prevent and treat COVID-19 (Cheng, 2020). The recommended dose for vitamin C is 500 mg every 8-12 hours; vitamin D is 400-1000 IU per day; multivitamins containing vitamins C, B, and E; and zinc is 1-2 tablets/24 hours, while probiotics benefits in the 107–108 CFU (Badan Pengawas Obat, 2020). These supplements will benefit if used with the recommended dosage, but it is necessary to watch out for unwanted side effects, primarily when used in the long term or large doses. The Covid-19 pandemic increased demand for supplements, vitamin C, and immunomodulatory herbal medicines. Many people are starting to follow the trend of consuming immune supplements to prevent Covid-19 and tend to panic buying (Rahayu & Rahmawati, 2020).

A study in several pharmacies in Indonesia stated that the Covid-19 pandemic impacted an increase in demand for supplement products which caused a shortage of stock (Fathoni et al., 2021). Studies in other countries also mention panic due to the pandemic and excessive product purchases (Hoti et al., 2020). Panic buying is a behavior resulting from the public's concern about the Covid-19 pandemic. According to the theory, behavior results from all kinds of experiences and interactions between humans and the environment. Moreover, behavior is a person's response or reaction to a stimulus (outside stimulus) (Notoatmodjo, 2012). The information stimulus without the knowledge factor will lead to inappropriate behavior. Mukti's research (2020) explains that there is a significant influence between knowledge on behavior.

The study of knowledge, attitudes, and behavior of using supplements by pharmacy consumers in the Surakarta area has never been done. This study aims to describe the level of knowledge and its relationship with attitudes toward health supplements and the behavior of consuming health supplements during the Covid-19 pandemic at pharmacies in the Surakarta area in different districts.

2. RESEARCH METHODS

The research design is a cross-sectional study using primary data. The research was carried out after obtaining a research ethic feasibility certificate from the Faculty of Medicine, Muhammadiyah University of Surakarta, number 3036/B2/KEPK/FKUMS/IX/2020. Primary data was obtained from respondents through a questionnaire. The research location is at the Jamsaren Pharmacy, Laweyan area, and Riyadh Pharmacy, Pasar Kliwon area, Surakarta. The two pharmacies were chosen to represent each region because they are private pharmacies with a high number of visitors, so the sample target is expected to be achieved. The population is all pharmacy customers from 21 September to 3 October 2020. The sample was obtained by consecutive sampling techniques to obtain respondents that meet the researchers' expectations based on the criteria set in a limited time. The minimum sample was calculated using the Slovin formula with a 95% confidence level so that the minimum sample was 96. The inclusion criteria set were pharmacy customers aged > 17 years, able to read and write, and willing to become respondents, as evidenced by the respondent's consent sheet.

The instrument was a questionnaire compiled by the research team using the reference to the Covid-19 Management Protocol and Guidelines for the Use of Herbs and Supplements in Facing

Covid-19 in Indonesia. Before being used, the questionnaire was given to 5 panelists consisting of practitioners and academics to assess content validity. It is intended to assess the relevance, clarity, simplicity of language, and level of importance of the questions. The content validity ratio (CVR) was calculated based on the results. CVR is determined using responses to the need for questions (nE) and the formula CVR= (nE-N/2)/ (N/2). The cut-off is determined based on Lawshe's table (Ayre & Scally, 2014), where the minimum CVR for each item for five panelists is 1.0. The questionnaire was tested for validity and reliability on the subject of 25 non-sample respondents from the general public aged > 17 years. According to Bolarinwa (2015), the number of respondents in the questionnaire reliability test can be between 20-30 people outside the sample. Determination of the validity of each question item is seen based on the Pearson correlation value or comparing the t count with the t table. The reliability of the questionnaire is based on the Cronbach Alpha value; it is reliable if the value is > 0.6 (Ghozali, 2011).

The questionnaire consists of 4 parts: the first part contains information on the respondents' characteristics of age, gender, education level, occupation, and sources of information about Covid-19; the second part contains questions about knowledge; the third part is about attitudes; the fourth part is about the behavior of using health supplements. Knowledge is measured based on seven questions assessed by each correct answer marked 1, then the total score is compared with the total score multiplied by 100%. The level of knowledge is classified based on the score obtained; poor knowledge (value < 70) and good (≥ 70) (Dewi & Farida, 2018).

Attitudes on the use of health supplements were assessed from statements with answer choices using a Likert scale ranging from 5 (strongly agree), 4 (agree), 3 (undecided), 2 (disagree), and 1 (strongly disagree). The total score ranged from 9-45; a score below the mean (<27) was classified as a non-panic attitude, and a score of 27 was classified as a panic attitude toward using health supplements. The behavior of using health supplements that respondents buy supplements during the Covid-19 pandemic. Moreover, it is also analyzed descriptively for reasons of use, method of obtaining, types of supplements, and considerations for selecting supplements. The relationship between knowledge and attitude was analyzed bivariate with Chi-Square. The effect of knowledge and attitudes on behavior was analyzed by multivariate logistic regression.

3. RESULTS AND DISCUSSION

3.1. Characteristics of Respondents

The total number of respondents in this study was 132 people. All respondents did not include patients suffering from Covid-19. The characteristics of respondents were classified as percentages based on gender, age, education, and occupation (**Table 1**).

Respondents were dominated by women (59.09%), following data that in Surakarta, women slightly dominate compared to men (Badan Pusat Statistika, 2020). In general, women tend to take preventive measures during the Covid-19 pandemic (Ferdous et al., 2020). Most respondents (43.18%) are between 17-25 years old or in late adolescence. The study stated that age and education level were correlated with knowledge level (Yuswantina et al., 2019). Another study stated no relationship between age and the level of knowledge and behavior of using supplements (Nengah et al., 2020). Respondents represented all levels of education, starting from primary, secondary, and higher education, but were dominated by secondary education (46.21%). The study results showed that most respondents had an upper secondary education level, but their knowledge about health supplements related to Covid-19 was relatively low (36.4%). Knowledge is closely related to education level, but it does not mean that people with low education do not have good knowledge. The study results (**Table 1**) show that 2 out of 4 respondents with primary education level have good knowledge. A person's knowledge about health objects is obtained from experience (Notoatmodjo, 2012). In addition, the level of knowledge is also influenced by external factors such as access to media information.

Table 1. Distribution of research respondents' characteristics on knowledge (N=132)

Characteristics of respondents	Frequency (percentage)	Knowledge	
		Poor (n=103)	Good (n=29)
Sex			
Male	54 (40.91%)	40 (30.3%)	14 (10.6%)
Female	78 (59.09%)	63 (47.7%)	15 (11,4%)
Age			
17- 25	57(43.18%)	46 (34.8%)	11 (8,3%)
26-35	21 (15.91%)	15 (11.4%)	6 (4.5%)
36-45	26 (19.70%)	22 (16.7%)	4 (3%)
46-55	16 (12.12%)	12 (9.1%)	4 (3%)
56-65	9 (6.82%)	6 (4.5%)	3 (2.3%)
>65	3 (2.27%)	2 (1.5%)	1 (0.8%)
Education			
SD	6 (4.55%)	4 (3%)	2 (1.5%)
SMP	15 (11.36%)	12 (9.1%)	3 (2.3%)
SMA	61 (46.21%	48 (36.4%)	13 (9.8%)
Higher Education	50 (37.88%)	39 (29.5%)	11 (8.4%)
Occupation			
Private	40 (30.30%)	33 (25%)	7 (5.3%)
Civil Servants	4 (3.03%)	4 (3%)	0
Entrepreneur	28 (21.21%)	24 (18.2%)	4 (3%)
Health workers	8 (6.06%)	6 (4.5%)	2 (1.5%)
Housewives	22 (16.67%)	17 (12.9%)	5 (3.8%)
Others	30 (22.73%)	20 (15.2%)	10 (7.6%)

Information can be quickly disseminated to the public in the Industrial revolution 4.0 era. Social media is a primary source of information about Covid-19 (Asemahagn, 2020). In addition, many other information sources can be accessed, such as electronic media such as television, owned by almost all levels of society. This research identifies the information sources used by the public's reference regarding information about Covid-19 (**Table 2**). Most respondents obtained information about Covid-19 from electronic media such as television, which is in line with the research that states a significant relationship between knowledge and access to information media. The respondents' occupations also varied but were dominated by respondents who worked in the private sector. Profession or occupation affects a person's level of knowledge (Wake, 2020).

Table 2. Sources of information accessed by respondents related to Covid-19

Source of information	Frequency	Percentage (%)
Electronic media	84	63.64%
Mass media	34	25.76%
Online media	61	46.21%
Health workers	31	23.48%
Family/ friends	37	28.03%

Information about Covid-19 and its prevention are currently widely circulated and can be accessed in various media. In addition to the official information from the Covid-19 task force, the public should be aware of the hoax news about Covid-19. One of the false information is about the lack of vitamins B, C, and zinc as the cause of Covid-19, so it is necessary to give vitamin C 1000 mg/hour, zinc 50 mg, young coconut water, or a mixture of ginger and lemon (Hidayat et al., 2021). People with poor literacy about Covid-19 can be easily influenced and believe wrong information. It is what is feared to affect people's attitudes and behavior in using supplements for endurance.

3.2. Respondent's Knowledge and Attitude

Based on the seven statements in the questionnaire, the knowledge assessed by respondents on supplements includes the causes of covid, the relationship between covid and the immune

system, the benefits of supplements, the rules for taking supplements, and the types of supplements. The results showed that 103 respondents had poor knowledge, and 29 had good knowledge about using health supplements to prevent Covid-19 (**Table 3**).

Table 3. Analysis of the relationship between knowledge and attitudes of respondents on the use of supplements (N=132)

Attitudes	Knowledge		Total (N)	Significance(p)*
	Poor	Good		
non-panic	39	15	**54**	
Panic	64	14	**78**	0.312
Total	**103**	**29**	**132**	

Note: * Chi-Square analysis results

Table 4 shows the aspects of knowledge assessed in this study. The percentage of respondents with the lowest correct answers (12.1%) is the proper use of health supplements. Many respondents think that health supplements should be given continuously daily to sick and healthy people with the same dose. In the Covid-19 management guidelines, supplements can be given to confirmed positive patients even though they are asymptomatic, with mild, moderate, or severe symptoms at different doses (Burhan et al., 2020). Health supplements are needed by someone who does not get enough particular micronutrients from his diet. In addition to the patient's health condition and nutritional adequacy rate, age is also a consideration in the consumption of supplements (Badan Pengawas Obat, 2020). The respondents own good knowledge, with a number of correct answers > 70%, which is the purpose of using health supplements and recommended supplements, which are 87.9% and 82.6%, respectively. Health supplements have a role in the normal functioning of the human immune system. Vitamin C is a recommended supplement in the Covid-19 handling protocol (Burhan et al., 2020).

Table 4. Percentage of correct answers on the assessment of respondents' knowledge (N=132)

No	Assessed knowledge	% Correct answer
1	cause of Covid-19	49.2
2	the risk of patients who can be infected with Covid-19	26.5
3	proper use of health supplements	12.1
4	the purpose of using health supplements	87.9
5	supplements recommended for Covid-19	82.6
6	when health supplements do not need to be given	34.8
7	the benefits of supplements in preventing Covid-19	66.7

Respondents' panic buying attitude on using supplements to prevent Covid-19 was measured by a questionnaire consisting of 9 items (**Table 5**). The table shows that most respondents show a panic attitude, with a high percentage of agreeing and strongly agreeing by going to various places to get supplements, feeling calm if they have stock, believing that they will not get infected if their immune system is good, do not try to look for information before buying supplements, and feeling that they still have to take supplements even though they are healthy. After scoring and categorizing panic and non-panic attitudes, it concluded that 54 people did not panic and 78 people panicked.

Table 3 shows the cross-tabulation and analysis of the relationship between attitudes and knowledge. The results showed that not all respondents with less knowledge panicked about preventing Covid-19. Based on the Chi-Square test, the p-value of 0.312 ($p > 0.05$) means no significant difference in respondents with poor knowledge or good attitude. There is no relationship between knowledge of using supplements to prevent Covid-19 with the respondent's panic buying attitude. This result is in line with Azwar (2007), which states that factors other than the level of knowledge influence attitudes, including the influence of other people, experience,

and culture. The limitation of this research is that there is no analysis of other factors that influence attitudes other than the knowledge factor.

Table 5. Percentage of respondents' answers related to attitudes

No	Statements on attitude	Percentage of answers (%)				
		Strongly agree (Score 5)	Agree (Score 4)	Doubtful (Score 3)	Disagree (Score 2)	Strongly disagree (Score 1)
1.	I feel it is important to buy supplements in large quantities to avoid running out.	3.79	27.27	6.06	46.21	16.67
2.	I will try to find though to various places to get supplements.	9.09	37.88	15.91	25.76	11.36
3.	I feel calm if I have a stock of supplements at home.	9.09	60.61	10.61	16.67	3.03
4.	I believe that taking supplements can help increase endurance.	22.73	65.15	8.33	3.79	0.00
5.	I believe I will not get covid-19 when I have an excellent immune system.	20.45	51.52	14.39	10.61	3.03
6.	I will follow the choice of most people in buying supplements.	5.30	30.30	11.36	35.61	17.42
7.	I will look for information before deciding what supplement to buy.	0.00	0.00	6.06	59.85	34.09
8.	I will buy supplements without considering the cost.	10.61	25.00	15.15	3561	13.64
9.	I believe that I still need supplements even though I am healthy.	17.42	68.94	4.55	6.96	3.03

3.3. Analysis of Respondents' Behavior on the Use of Supplements during the Covid-19 pandemic

In addition to attitudes and knowledge, this study also describes respondents' behavior in using supplements. Several studies state that knowledge and attitudes affect behavior. **Table 6** shows the behavior of buying and using health supplements related to Covid-19.

Single vitamin C is a supplement that respondents widely consume. It is a positive behavior to prevent Covid-19 and follows the protocol for handling Covid-19. Vitamin C is the primary therapy to improve the immune system in asymptomatic Covid-19 patients (Burhan et al., 2020). Most respondents (59.85%) chose supplements on their initiative, and only a small (4.5%) chose advice from pharmacies. It can be attributed to a large amount of information about supplements, one of which is through electronic media (television), which respondents widely access as a source of information. However, regarding how to obtain supplements, most respondents (59.85%) answered pharmacies, which shows that people realize and understand that pharmacies are a place to get trusted drugs. These results align with the Get, Use, Save and Dispose of Medicine (Dagusibu) campaign by the Indonesian Pharmacists Association on how to get accurate medicine.

Table 7 shows the results of the multivariate test with logistic regression. The analysis results identify that only attitude variables are related to behavior, as evidenced by the value of $p = 0.008$ ($p < 0.05$). The knowledge variable is not related to the respondent's behavior. These study results are in line with the report of a study related to the use of non-prescription drugs by Suarni et al. (2014), which states that attitudes affect the behavior of respondents.

These study results indicate that the role of health workers, especially pharmacists, in providing information about supplements still needs to be improved so that public knowledge can improve panic buying attitudes that affect the behavior of using health supplements. The

weakness of this research is filling out the questionnaire without being accompanied by the researcher, so it is possible that the respondent's understanding of the questions is different.

Table 6. Respondent's behavior on supplements during the Covid-19 pandemic (N=132)

Behavior	N	Percentage (%)
Buying supplements during the pandemic		
No	65	49.25
Yes	67	50.75
Type of supplement (can be more than one answer)		
Multivitamin	25	18.94
Vitamin C tunggal// single vitamin C	59	44.7
Imunomodulator	33	25
Madu// Honey	44	33.33
How to get supplements (can be more than one answer)		
Buy at the pharmacy	79	59.85
Prescription	14	10.61
Drug store	30	22.73
Supermarket	16	12.12
Online shop	2	1.515
Reasons for taking supplements (can be more than one answer)		
Want to take care of health	101	76.52
Less food intake	13	9.84
Help for recovery	9	6.82
When to take supplements		
Everyday	46	34.85
Sometimes	29	21.97
Feeling unwell	44	33.33
Supplemental choice giver (can be more than one answer)		
Self-initiative	79	59.85
Family	30	22.73
Friends	5	3.788
Social media	8	6.061
Recommendation from the pharmacy	6	4.545

Table 7. Bivariate test of the relationship between knowledge and attitudes toward behavior

Knowledge	Behavior		Significance (p)
	Purchasing	Not Purchasing	
Poor	56	47	0.118
Good	11	18	
Attitude			
Panic	47	31	0.008*
Non-panic	20	34	

4. CONCLUSION

Most respondents (78%) still lacked knowledge and panicked (56%) regarding using health supplements to prevent Covid-19. The respondent's knowledge is not related to the panic buying attitude. The attitude of the respondents related to the behavior of using health supplements was shown by the value of $p = 0.008$ ($p < 0.05$). Most respondents showed the behavior of buying health supplements on their initiative at the pharmacy (59.85%). The study results show that people still need education from pharmacists, especially those who practice in pharmacies, about the proper use of health supplements. Similar research can be done by identifying other external factors influencing behavior.

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6. CONFLICT OF INTEREST

The author declares that there are no competing conflicts of interest.

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