

Profile Study of Drug and Supplement Use in COVID-19 January 2022 – December 2022 at the Purworejo Regional Hospital

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ABSTRACT

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Coronavirus 19, also known as COVID-19, is a disease caused by the acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The high transmission process between humans causes this virus to move quickly and is designated as a pandemic. Until now, there is still no specific treatment related specifically to SARSCov-2 infection, so treatment management is carried out using symptomatic therapy according to symptoms, supportive therapy for complications prevention therapy and comorbid treatment. This study aims to look at the profile of drug and supplement use in COVID-19 patients. This research is included in the descriptive research with retrospective data collection. The data for this study consisted of all prescriptions and medical records of COVID-19 patients for the period January 2022-December 2022 at the Purworejo Regional Hospital who met the inclusion criteria. The results of data collection on COVID-19 patients who met the inclusion criteria obtained 100 medical record data. The characteristics of COVID-19 patients are dominated by men, in the age group over 65 years, with patients who have a history of comorbid pneumonia, and length of stay of more than 5 days. The results of the treatment profile of COVID-19 patients showed that the use of antibiotics, namely ceftriaxone 31 (4.18%), antivirals, namely Favipiravir 97 (13.05%), drugs for digestive disorders, 69 (9.31%), analgesics and antipyretics, 51 (6.88%), mucolytic 91 (12.28%), while vitamins were mostly given at 72.97%.

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1. INTRODUCTION

At the end of 2021, the omicron variant of the Coronavirus (SARS-CoV-2) emerged which quickly spread throughout the world (Burhan et al., 2022). According to (World Health Organization., 2020), named this virus as 2019 novel coronavirus (2019- nCoV) and changed its name to Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) by the Coronaviridae Study Group (CSG) of the International Committee on Taxonomy of Viruses. Officially, COVID-19 is the name of the disease caused by the virus (Satria et al., 2020).

The first COVID-19 case in Indonesia was announced on March 2 2020 with 2 cases of sufferers. The Government of the Republic of Indonesia reported positive cases of COVID-19 in Indonesia as of January 7 2023 totaling 6,723,201 cases and 160,679 cases of death related to COVID-19 while patients who had recovered from COVID-19 were 6,554,066 patients (Ministry of Health of the Republic of Indonesia, 2023) . According to (Purworejo, 2022) in 2022 positive confirmed cases of COVID-19 were 21,710 cases with details of 1,121 cases of death and 20,524 cases of recovery.

COVID-19 disease can be transmitted through direct contact, coughing, sneezing, or small droplets from the mouth or nose of an infected person (Ariyani et al., 2021). The droplet then falls on objects around it. When another person touches an object that has been contaminated with the droplet, then that person touches the eyes, nose or mouth (facial triangle), then that person can be infected with COVID-19 (Decree of the Minister of Health of the Republic of Indonesia, 2020). This can also happen if someone is infected with COVID-19 when accidentally inhaling droplets from the patient. That is why it is important for us to maintain a distance of at least one meter from people who are sick (Decree of the Minister of Health of the Republic of Indonesia, 2020). COVID-19 infection causes

several signs and symptoms that can cause mild, moderate or severe symptoms. The main clinical symptoms that appear are fever (temperature > 38°C), cough and difficulty breathing (Ariyani et al., 2021). In some patients, the symptoms appear mild, not even accompanied by fever (Wang et al., 2020; World Health Organization., 2020).

Various attempts have been made since the outbreak of COVID-19 to find effective therapeutic drugs. But there are still many therapies for the treatment of COVID-19 patients that use antiviral agents or antibodies that are used for other diseases. This is because there is no specific treatment available for SARS-CoV-2, so the treatment used is still based on experience from the SARS and MERS coronaviruses (Khaerunnisa et al., 2022). Research Himatul et al., 2019, states the same thing that therapy for the treatment of COVID-19 still uses symptomatic and supportive therapy to prevent complications. In addition, several studies have stated that the management of COVID-19 is still in the form of symptomatic and supportive therapy and there is no definitive treatment for patients with confirmed COVID-19 (Melviani & Yulianto, 2022; Himatul et al., 2019). According to the Guidelines for the Management of COVID-19 in December 2020, there are only a few pharmacological therapies that are recommended for patients with mild, moderate, or severe symptoms, such as administering Vitamin C, Vitamin D, antibiotics in the form of Azithromycin, Antivirals in the form of Oseltamivir, Favipiravir, and Remdesivir, medication symptomatic and phytopharmaca (Erlina Burhan, Agus Dwi Susanto, 2020). However, in reality, many COVID-19 patients have many co-morbidities or comorbidities so that certain prescribing patterns emerge.

Based on the background description above, the researcher is interested in researching patient characteristics and profiles of medications and supplements used by COVID-19 patients in January 2022 – December 2022 at the Purworejo Regional Hospital. The purpose of this study is to determine the characteristics of COVID-19 patients and the profile of treatment and supplements the most administered to COVID-19 patients in January 2022 – December 2022 at the Purworejo Regional Hospital.

2. METHOD

This research is descriptive non-experimental with a qualitative approach, with an observational retrospective research design. The subject of this study was the medical record data of COVID-19 patients who were undergoing hospitalization. The population in this study were COVID-19 patients from January 2022 – December 2022. The sample in this study was adjusted according to the inclusion and exclusion criteria. Inclusion criteria include: Patients aged ≥ 18 years, Inpatients diagnosed with COVID-19 January 2022 – December 2022 at the Purworejo Regional Hospital, Patients with complete medical records, Inpatients diagnosed with COVID-19 with a history of complications. Meanwhile, the exclusion criteria in the study included: An inpatient with a diagnosis of COVID-19 who has not been given medication but has died, Incomplete medical records, Female patients with pregnancy (Molnupiravir and Nirmatrelvir/Ritonavir should not be administered to women who are pregnant or planning a pregnancy).

The collection was carried out by testing the application for research ethics feasibility to the Ethics Commission of Muhammadiyah Gombong University which had been approved by No.032.6/II/3.AU/FKEPK/I/2023. Then a selection of COVID-19 patient medical record files that match the inclusion criteria, records some data obtained from the patient's medical record, namely patient gender, patient age, and profile of drug use which includes drug name, drug dosage form, drug dosage and drug form. medicinal preparations. Then the data obtained were analyzed using Microsoft Excel in the form of percentages and presented in the form of tables or diagrams.

3. RESULTS AND DISCUSSION

This research was conducted by collecting data from medical records for the 2022 period. The number of samples of medical records for COVID-19 patients recorded during January 2022 – December 2022 at the Purworejo Regional Hospital was 100 medical records. All samples were then selected according to the inclusion criteria to obtain as many as 100 medical records used as samples in this study.

Patient characteristics

Patient characteristics include gender, age group, degree of severity, length of stay, and comorbidities which are presented in tabular form.

Table 1. Characteristics of COVID-19 Patients

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	56	56%
Female	44	44%
Ages		
18-25	10	10%
26-45	10	10%
46-65	38	38%
>65	39	39%
Degree of Severity		
Ringan	63	63%
Sedang	25	25%
Berat	12	12%
Length of treatment		
1-5 hari	48	48%
>5 hari	52	52%
Associated disease		
Pneumonia	23	23%
Hipertensi	21	21%
GERD	15	15%
Kolesterol	8	8%
Anemia	4	4%
Dispepsia	4	4%
Diabetes Mellitus	2	2%
Chronic Heart Failure	2	2%
Vertigo	2	2%
No co-morbidities	19	19%

Based on the results of the study in Table 1, related to patient characteristics based on gender with the highest number of male patients, namely 56 patients (56%), while 44 female patients (44%). This result is in accordance with (Sanjaya et al., 2021), stating that the percentage of men is higher than the percentage of women. This happens because women have an X chromosome and sex hormones such as progesterone which have an important role in the innate and adaptive immune system. Besides that, it is suspected that due to lifestyle factors, wrong lifestyle causes men to be at risk of exposure to COVID-19, namely smoking habits, smoking can make lung cells more susceptible to infection with COVID-19 through increasing ACE2 receptors (Adityo et al., 2020).

Based on age, the most positive results for COVID-19 were elderly patients aged over 65 years, with 39 patients (39%). This is because the elderly group is at high risk of being infected with the corona virus which is caused by a weakened immune system with age and having comorbid or comorbid diseases, this is also reinforced by (Araban et al., 2022), where the age range is above 65 years easily exposed to the corona virus because the immune system decreases with age. Based on the degree of severity, the most common mild category was 63 patients (63%) characterized by the appearance of symptoms such as fever, fatigue, anorexia, shortness of breath, myalgia. Other non-specific symptoms such as sore throat, nasal congestion, headache, diarrhea, nausea, vomiting, anosmia or loss of taste (ageusia) (Burhan et al., 2022). According to Khaerunnisa et al., 2022, the degree of severity that occurs in patients certainly varies according to the patient's condition or the possibility that the patient has co-morbidities that can exacerbate the situation.

Based on the length of stay of COVID-19 patients, the most frequent cases were more than 5 days with a total of 52 patients (52%). According to (Marliana & Marliani, 2021), that patients with

mild degrees of treatment with Favipiravir have better effectiveness in terms of length of stay in patients who receive Favipiravir therapy have a faster recovery rate, where patients who receive Favipiravir therapy have a shorter average length of stay i.e. 5 – 7 days.

Based on the history of co-morbidities, most COVID-19 patients suffered from pneumonia in 23 patients (23%) and the second co-morbidity that exacerbated the level of COVID-19 symptoms, namely hypertension in 21 patients (21%). According to (Maharianingsih et al., 2022), the results of a history of comorbidities or diseases controlled by pneumonia in 102 patients (51%) pneumonia are often found in COVID-19 patients, because when the patient is infected with the virus it can clog the lung wall causing fluid accumulate in the cavity so that the patient has difficulty breathing or shortness of breath (Khaerunnisa et al., 2022).

Treatment Profile of COVID-19 Patients

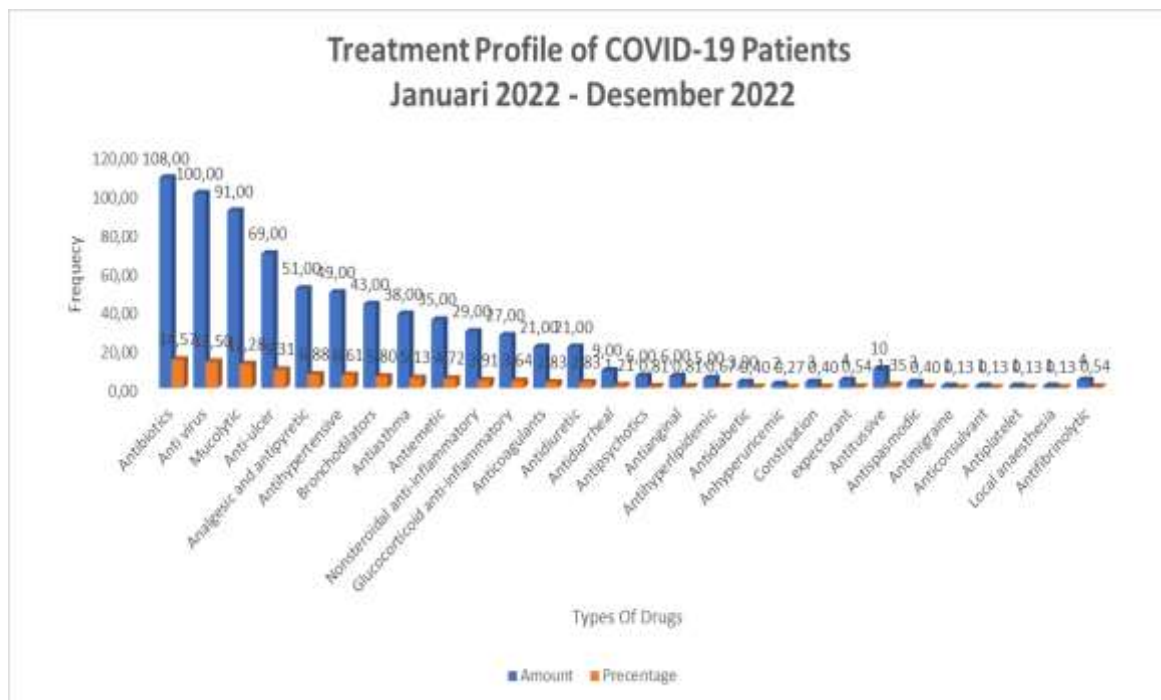


Figure 1. Treatment profile of COVID-19 patients

Based on Figure 1, the treatment profile of COVID-19 patients January 2022 – December 2022 at the Purworejo Regional Hospital of the 741 prescriptions that have been analyzed the most widely used are the use of antibiotics, antivirals, mucolytics, anti-ulcers, analgesics and antipyretics, bronchodilators, antiemetics and anti-inflammatories. This study is almost the same as (Muhammad Fakhry Ramadhan et al., 2022), stating that the profile of prescribing drugs used in COVID-19 patients based on pharmacological therapy is Antibiotics, Antivirals and based on symptomatic therapy is Anti-ulcer, Analgesic and Antipyretic, Bronchodilators, Antiemetics and Anti-inflammatory. In contrast to research (Wasiaturrahmah et al., 2022), the most widely administered profile of COVID-19 drug use was supplements and vitamins with 6538 prescriptions and antibiotics with 2813 prescriptions.

Tabel 2. Treatment profile of COVID-19

Therapy class	Drug Type	Frequency (n)	Percentage (%)	Total Percentage (%)
Antibiotik	Azitromicin	27	3,64	14,57
	Ceftriaxone	31	4,18	
	Cefadroxil	1	0,13	
	Cefixime	12	1,62	

Cefoperazone	25	3,37
Cefixime	1	0,13
Cotrimoksazole	1	0,13
Isoniazid	1	0,13
Levofloxacin	4	0,54
Meropenem	3	0,40
Pirazinamid	1	0,13
Rifampisin	1	0,13
Total	108	

Tabel 2. Treatment profile of COVID-19 patients

Therapy class	Drug Type	Frequency (n)	Persentase (%)	Total Percentage (%)
Antivirus	Favipiravir	97	13,09	13,50
	Remdesivir	3	0,40	
	Total	100		
Mukolitik	N-Acetylsistein	62	8,37	12,28
	Vestein	18	2,43	
	Erdobat	7	0,94	
	Ambroxol	4	0,54	
	Total	91		
Antitukak/ Sistem Pencernaan	Lansoprazole	7	0,94	9,31
	Sucraflat	4	0,54	
	Omeprazole	13	1,75	
	Pantoprazole	40	5,40	
	Esomeprazole	5	0,67	
Total	69			
Analgetic dan antipiretik	Paracetamol	42	5,67	6,88
	Tamoliv Injeksi	9	1,21	
	Total	51		
Antihipertensi	Amlodipine	14	1,89	6,61
	Bisoprolol	14	1,89	
	Candesartan	17	2,29	
	Clonidine	2	0,27	
	Nicardipin	1	0,13	
	Propanolol	1	0,13	
	Total	49		
Bronkodilator	Aminophylline	22	2,97	5,80
	Combivent	2	0,27	
	Neprovent	1	0,13	
	Salbutamol	16	2,16	
	Ventolin	2	0,27	
Total	43			
Antiasma	Salbutamol	16	2,16	5,13
	Aminophylin	18	2,43	
	Neprovent	3	0,40	
	Flixotide	1	0,13	
Total	38			
Antiemetik	Ondancerton	33	4,45	4,72
	Metoklopramid	2	0,27	
	Total	35		
Antiinflamasi nonsteroid	Analsik	3	0,40	3,91
	Meloxicam	2	0,27	

Deksketoprofen	5	0,67
Ketorolac	11	1,48
Natrium Dikklofenak	1	0,13
Acetysalisilic Acid	7	0,94
Total	29	

Tabel 2. Treatment profile of COVID-19 patients

Therapy class	Drug Type	Frequency (n)	Persentase (%)	Total Percentage (%)
Antiinflamasi Glukokortikoid	Dexametasone	15	2,02	3,64
	Hydrocortisone	1	0,13	
	Metilprednisolon	11	1,48	
	Total	27		
Antikoagulan	Aspilet	4	0,54	2,83
	Hepagusan	2	0,27	
	Rivaroxabin	3	0,40	
	Warfarin	1	0,13	
	Unfraction Heparin	7	0,94	
	Fondaparinux	4	0,54	
Total	21			
Antidiuretik	Furosemid	18	2,43	2,83
	Spirinolakton	3	0,40	
	Total	21		
Antidiare	Loperamid	3	0,40	1,21
	Diatab	6	0,81	
	Total	9		
Antipsikotik	Diazepam	2	0,27	0,81
	Clozapine	2	0,27	
	Alprazolam	2	0,27	
	Total	6		
Antiangina	Digoxin	1	0,13	0,81
	Nitrokaf	4	0,54	
	Isosorbid Dinitrat	1	0,13	
	Total	6		
Antihiperlipidemia	Rosuvastatin	3	0,40	0,67
	Atorvastatin	1	0,13	
	Fenofibrate	1	0,13	
	Total	5		
Antidiabetes	Metformin	2	0,27	0,40
	Glimepirid	1	0,13	
	Total	3		
Anhiperuricemic	Allopurinol	1	0,13	0,27
	Febuxostat	1	0,13	
	Total	2		
Konstipasi	Dulcolax	2	0,27	0,40
	Laxadine	1	0,13	
	Total	3		

Table 2. Treatment profile of COVID-19 patients

Therapy class	Drug Type	Frequency (n)	Persentase (%)	Total Percentage (%)
Ekspektoran	Gliseryl Guaicolat	1	0,13	
	OBH	3	0,40	0,54
	Total	4		
Antitusif	Codein	10	1,35	1,35
Antispasmodic	Hyoscine N-Butylbromide	3	0,40	0,40
Antimigraine	Flunarizine	1	0,13	0,13
Antikonsulvan	Clobazam	1	0,13	0,13
Antiplatelet	Clopidogrel	1	0,13	0,13
Anestesi lokal	Lidokain	1	0,13	0,13
Antifibrinolitik	Asam tranexamat	4	0,54	0,54
Total Drug Use		741		100

Antibiotics used in COVID-19 patients at Hospital X, Purworejo district totaled 108 types of drugs (14.57%). The type of antibiotic that was used the most was Ceftriaxone with a total of 31 (4.18%), followed by Azithromycin as many as 27 (3.645). The use of this antibiotic is almost the same as (Retno et al., 2022), that the use of the most antibiotics is Ceftriaxone 50 (23.58%). The antibiotic Ceftriaxone is included in the Watch category (WHO Aware) which has a higher potential for resistance than other antibiotics, so it must be prioritized as the main target of its therapy monitoring program (Dewi & Sitorus, 2023) (Ardila, 2023). In the 2022 COVID-19 management guidelines, Ceftriaxone is used as empirical therapy in cases of community-acquired pneumonia or suspected co-infection with moderate suspected/probable/confirmed bacteria, severe and critical suspected cases, and severe and critical probable/confirmed cases (Burhan et al., 2022).

In this study, the most frequently used types of mucolytic drugs were 91 types of mucolytic drugs (12.28%). The most frequently used mucolytic was N-Acetylcysteine with a total use of 62 drugs (68.13%). N-acetylcysteine is used orally at a dose of 600 mg/day as a mucolytic (Sujana & Maulida, 2021). N-acetylcysteine is an amino acid derivative and is used as an additional therapy in cases of COVID-19. This is because N-acetylcysteine is able to suppress the production of pro-inflammatory cytokines, suppress viral replication, and act as an antioxidant so that it can reduce inflammation due to infection with the COVID-19 virus (Sujana & Maulida, 2021).

The next most widely used drug is a drug for digestive system disorders. Administration of this drug is used as symptomatic therapy in COVID-19 patients (Himatul et al., 2019). In this study the drug most often used was Pantoprazole with a total of 40 patients (57.14%). In contrast to research (Himatul et al., 2019), in Samarinda in 2020, the symptomatic therapy given for digestive system disorders was Omeprazole with an amount (4.99%). The PPI group is able to suppress stomach acid production, but by increasing the stomach microbiota, causing excess bacterial growth in the intestine (Lin et al., 2022). In addition, PPIs can also modulate the immune response by inhibiting neutrophil function with anti-inflammatory activity (Luxenburger et al., 2021) (source). Thus, histamine 2 receptor antagonists such as famotidine are preferred because they can significantly reduce the risk of death or intubation in COVID-19 patients (Luxenburger et al., 2021).

The next most used drug use is analgesic-antipyretic drugs. Based on table 2, the most used is Paracetamol with a total of 42 (82.35%). According to the COVID-19 management guidelines, Parecetamol is still used as the therapy of choice for treating fever and pain, even though it can obscure the symptoms that occur in patients (Burhan et al., 2022) (Himatul et al., 2019). Giving paracetamol also needs to be considered related to the intensity of pain felt by the patient and the patient's condition with changes in body systems in patients with COVID-19 infection. Commonly used analgesics are Non-opioid analgesia (Paracetamol, Non-steroidal anti-inflammatory drugs

(NSAIDs), Opioids and some adjuvant analgesia according to the patient's pain condition (Burhan et al., 2022) (Ramadani et al., 2017).

The antihypertensive drug most often used in table 2 related to the treatment profile was Candesartan in 17 patients (34.69%). The use of this antihypertensive drug was given because many COVID-19 patients at hospital X in the Purworejo area had a history of hypertension. According to the guidelines for the management of COVID-19 edition IV, the choice of candesartan which belongs to the Angiotensin Receptor Blockers (ARB) group can still be given because it does not increase the progression of COVID-19 disease (Burhan et al., 2022). In addition, the mechanism of Angiotensin Receptor Blockers (ARB) is able to reduce inflammation systemically, especially in the lungs, heart, kidneys and can eliminate the possibility of worsening to ADRS, myocarditis, or acute kidney injury (Burhan et al., 2022).

Profile of Supplement and Vitamin Treatment of COVID-19 Patients

Table 3. Profile of Supplement and Vitamin Treatment in COVID-19 patients

Therapy class	Drug Type	Frequency (n)	Persentase (%)	Total Percentage (%)
Vitamin	Vitamin C	31	20,67	72,67
	Vitamn D	26	17,33	
	Becom C	15	10,00	
	Asam folat	12	8,00	
	Vitamin b12	10	6,67	
	Neurosanbe	5	3,33	
	Vitamin K	3	2,00	
	Total	109		
	Zegavit	12	8,00	
	Imbbost/imunos	8	5,33	
Supplement	Citicoline	7	4,67	27,33
	Curcuma	6	4,00	
	Lapibal	3	2,00	
	Posafit	2	1,33	
	Emibion (Fe)	2	1,33	
	Zink	1	0,67	
	Total	41		
	Total Drug Use		150	

Based on table 3, regarding the profile of the use of supplementary drugs and vitamins in COVID-19 patients, the total use of drugs is 105 types of drugs. The most vitamins were given, namely 109 types of vitamins (72.67%). The vitamin that was given the most was vitamin C with a percentage of 20.67%. This study is almost the same as the study that the treatment profile for COVID-19 patients was mostly vitamin C administration of 4.91%. Consuming vitamins can increase immunity in the body, so that good immunity can prevent COVID-19 infection and help the healing process (Ariyani et al., 2021). According to the 4th (fourth) edition of the Guidelines for the Management of COVID-19, the use of vitamin C can be used as a therapeutic option in treating COVID-19 patients, both mild and severe (Burhan et al., 2022). According to research, the effects of giving vitamin C can support various cellular functions in the natural and adaptive immune system (Bimantara, 2020). The mechanism of action of vitamin C is to assist in normal neutrophil function, modulation of potential pathways, activation of signaling cascades, regulation of inflammatory mediators and increasing neutrophil motility to sites of infection (Aisy et al., 2023).

The second most used vitamin is vitamin D, with 26 (17.33%). Vitamin D is able to reduce the risk of death from COVID-19 (Himatul et al., 2019). This is because vitamin D acts as a physical barrier by upregulating genes that encode proteins in the cellular and adaptive natural immune system (Ariyani et al., 2021) (Aisy et al., 2023). In addition, vitamin D can also increase immunomodulatory

activity which can potentially limit cytokine storms due to COVID-19 infection. According to the Indonesian Doctors Association (Burhan et al., 2022), the use of vitamin C and vitamin D can be used as a supporting therapy that has the potential to protect Covid-19 from COVID-19 and prevent disease.

Based on table 3, the most used supplement is the zegavit product with a percentage of 8% of the total use of vitamins and supplements. The use of zegavit is a combination of multivitamins and Zinc. Zinc (ZN) was able to effectively inhibit the RNA synthesis activity of nidovirus in vitro, which was manifested through changes in RdRp activity during the extension phase of RNA synthesis. This prolonged effect on the RNA synthesis phase can be reversed by the addition of the Zn²⁺ chelator. Thus, it can be said that in the corona virus, Zn²⁺ can inhibit the proper proteolytic process of replica polyproteins and RdRp activity (Hojyo & Fukada, 2016; Scott et al., 2019). Giving Zinc (Zn) can increase T-cell-mediated functions, increase levels of IL-2 mRNA, and to reduce the production of pro-inflammatory cytokines, DNA, TNF- α , and lipid oxidation (Wasiaturrahmah et al., 2022).

In addition to the most common drug use, many COVID-19 patients also receive a very diverse combination of therapies such as a combination of antivirals, corticosteroids, anticoagulants, vitamins, antipyretics, antibiotics and symptomatic therapy. Combining more than 5 (five) types of drug items or often called polypharmacy can increase unwanted events.

4. CONCLUSION

Based on the results of the research previously described, it can be concluded that the characteristics of COVID-19 patients at Hospital X in the Purworejo area are dominated by men, in the age group over 65 years, with patients who have a history of comorbid pneumonia, and length of stay of more than 5 day day. The results of the treatment profile of COVID-19 patients showed that the use of antibiotics, namely ceftriaxone 31 (4.18%), antivirals, namely Favipiravir 97 (13.05%), drugs for digestive disorders, 69 (9.31%), analgesics and antipyretics, 51 (6.88%), mucolytic 91 (12.28%), while vitamins were mostly given at 72.97%.

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