

Remote Nursing Assessment for Peritoneal Dialysis Users During Covid-19 Pandemic: An Systematic Review

by Ridha Afzal

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Remote Nursing Assessment for Peritoneal Dialysis Users During Covid-19 Pandemic: An Systematic Review

Penilaian Keperawatan Jarak Jauh untuk Pengguna Dialisis Peritoneum Selama Pandemi Covid-19: Tinjauan Sistematis

Ridha Afzal¹, Syaifoel Hardy¹, Isak Jurun Hans Tkayo²

¹⁾ Indonesia Nursing Trainers, Ahmad Yani Street, Malang, Jawa Timur 65216, Indonesia

²⁾ Poltekkes Kemenkes Jayapura, Padang Bulan II Street, Jayapura City, Papua 99351, Indonesia

Corresponding Author: ridhaafzal.rj@gmail.com

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Abstract

Chronic Kidney Disease nursing has become one of the centers of attention because of professional concerns about all the possibilities that occur in the handling of Peritoneal Dialysis (PD) users in health care centers in the era of Covid-19 pandemic. To maximize the achievement of the quality goals of nursing services, an updated nursing assessment system of PD users is needed during the pandemic. To identify changes in nursing assessment that occurred during the Covid-19 pandemic for PD users and offer a solution by creating a remote nursing assessment system. The study used an article review and PRISMA analysis. The initial 842 documents were drawn from the search engine of which 169 records extracted from Google Scholar, ResearchGate, SagePub, and Semantic Scholar. The search keywords were nursing assessment, PD users, and Covid-19. The indicators include respondents (PD users), research methods (quantitative, document review), years of publication (2020-2021), results (focus on nursing assessment during the Covid-19 pandemic), and languages (English and Indonesian). The document search used the PICOT (Population, Intervention, Comparison, Outcome, and Time). The PRISMA analysis finds remote nursing assessment during pandemic in handling PD users can be done in various health care services that have CAPD units. Yet it requires training and orientation programs. The challenges are the need for funds, time, and the readiness of human resources in which they were not mentioned in the previous researchers' findings. Tele-PD-nursing, home delivery service, PD nursing triage, and a PD nursing dashboard are the combination of remote PD nursing management as an alternative solutions in PD users assessment during the Covid-19 pandemic era.

Keywords: Remote Nursing Assessment, PD Users, Covid-19

Abstrak

Keperawatan Penyakit Ginjal Kronik menjadi salah satu pusat perhatian karena kepedulian profesional terhadap segala kemungkinan yang terjadi dalam penanganan pengguna Peritoneal Dialysis (PD) di Puskesmas di era pandemi Covid-19. Untuk memaksimalkan pencapaian sasaran mutu pelayanan keperawatan, diperlukan sistem pengkajian keperawatan pengguna PD yang terupdate di masa pandemi. Untuk mengidentifikasi perubahan asesmen keperawatan yang terjadi selama pandemi Covid-19 bagi pengguna PD dan menawarkan solusi dengan membuat sistem asesmen keperawatan jarak jauh. Penelitian ini menggunakan tinjauan artikel dengan analisis PRISMA. 842 dokumen awal diambil dari mesin pencari yang 169 catatannya diambil dari Google Scholar, ResearchGate, SagePub, dan Semantic Scholar. Kata kunci pencarian adalah penilaian keperawatan, pengguna PD, dan Covid-19. Kriteria inklusi adalah pengguna PD selama pandemi, sedangkan kriteria eksklusi adalah pasien CKD tetapi bukan pengguna PD dan pengguna PD sebelum pandemi, metode penelitian (kuantitatif, tinjauan dokumen), tahun publikasi (2020-2021), hasil (fokus pengkajian keperawatan selama pandemi Covid-19), dan bahasa (Inggris). Pencarian dokumen menggunakan PICOT (Population, Intervention, Comparison, Outcome, dan Time). Analisis PRISMA menemukan bahwa pengkajian keperawatan selama masa pandemic dalam penanganan pasien pengguna PD dapat dilakukan di berbagai pusat pelayanan

kesehatan yang memiliki unit CAPD. Namun dibutuhkan program pelatihan dan orientasi. Tantangannya berupa dana, waktu serta kesiapan SDM yang tidak disebutkan pada penelitian-penelitian terdahulu. Tele-PD-nursing, home delivery service, PD Nursing Triage, dan PD Nursing Dashboard merupakan kombinasi manajemen keperawatan PD jarak jauh sebagai solusi alternatif penilaian pengguna PD di masa pandemi Covid-19.

Kata Kunci: Asesmen Keperawatan Jarak Jauh, PD User, Covid-19

Introduction

The 2019 coronavirus (COVID-19) pandemic is a threat to all populations, especially those with underlying diseases such as cardiovascular disease, diabetes, and kidney disease.¹ The population of patients with chronic diseases is the group most affected by this pandemic.² One of these weak groups is patients with end-stage renal disease (ESRD).³ Approximately 10% of these ESRD cases undergo dialysis.³ Patients on dialysis tend to have an increased risk of COVID-19 and its complications due to older age, multiple morbid conditions, and a low immune system.⁴ Patients with chronic kidney failure who require hemodialysis (HD) or peritoneal dialysis (PD) to maintain their lives often have a compromised immune system must face this threat.⁵ Studies demonstrated the high prevalence and poor prognosis of COVID-19 in dialysis users, but its effect on patients with PD is unknown (Jiang et al., 2021). Researchers suggest there is a need for special care for PD patients under COVID-19.⁶ The first step of its special care for PD users is the nursing assessment.

Assessment in nursing helps identify any abnormalities experienced by chronic kidney disease patients early.⁷ During pandemic, a careful assessment will not only help treat patient disorders more quickly but will also assist in establishing a diagnosis.⁸ During this Covid-19 pandemic, where all populations face the threat of being exposed, clear nursing procedures are needed on how to handle PD users at an early stage. The World Health Organization (WHO) has provided guidelines on how to screen patients before hospitalization.⁹ Each country also enforces decisions regarding the handling of patients during a pandemic. Likewise, at the institutional level, there has been a change in nursing procedures due to Covid-19.¹⁰ Therefore, a clear nursing assessment is needed in the admission of PD users in hospitals or health care centers.

The soaring number of Covid-19 cases in Indonesia in mid-2021 made the Government take the policy of Enforcement of Community Activity Restrictions (PPKM) which was intended to limit or control a sharp increase in morbidity.¹¹ The health service centers have also implemented a similar policy, namely tightening hospital admission requirements in the form of an Antigen Swab or PCR Test certificate.¹² Those problems caused PD users complain because not all patients come from areas where they can get these facilities (health.detik.com., April 9, 2020). They add to the unpopularity of the use of PD in Indonesia in addition to other problems. Previous studies identified some reasons behind the unpopularity of CAPD among CKD patients including the lack of maximizing the role of public health nurses (Puskesmas) nurses in Indonesia.¹³

The study sought to find answers to what changes have occurred in nursing assessments for PD users during the Covid-19 pandemic. The results of this exploration were utilized to formulate remote nursing management in the form of an assessment for PD users in the Covid-19 pandemic era. The goal is to offer a solution to the phenomenon of PD users from the nursing point of view.

Methods

This research method is an analytical review using PRISMA analysis as a systematic review. The research was conducted at an early stage through a document search, keyword identification, and article review from search engines at Google Scholar, Research Gate, SagePub, and Semantic Scholar. The research method was applied due to various limitations in conducting direct interviews with authorized sources. A similar method has been used in cases of peritoneal dialysis.¹⁴ The initial search yielded 5420 clicks in 0.36 seconds on Google. The next search found 842 records

as random material which we put in the database under the scope of Identification of PRISMA strategy. The characteristics of the research are nursing assessment, PD users, and Covid-19 pandemics. The researcher identified these 3 characteristics with the descriptive method because the data and information collected focused on the real phenomena and problems. Records were screened, deleted, retrieved, assessed for eligibility and records for inclusion²⁰ the study review, following the provisions of the PRISMA (Preferred Reporting Items for Systematic Review and Meta-analyses) Analysis, which is divided into three steps: identification, screening, and inclusion. Of the 842 literature available in the protocol database, the filtered records were separated into Google Scholar (n=82), ResearchGate (n=42), SagePub (n=37), and Semantic Scholar (n=25) or of total 186 documents (22.1 %), and from other sources 673 documents (77.9%). The documents sought are limited during the Covid-19 pandemic (2020-2021) with inclusion criteria in the form of PD users, while the inclusion criteria are all CKD patients who do not use PD, or use PD before the pandemic period. The inclusion criteria consisted of PD users, research methods (quantitative, document review, descriptive, and cross-sectional design), year of publication (from 2016 to 2021), research results (focusing on nursing assessment on PD users during pandemics) and language used (English and Indonesian). The literature search was carried out using the PICOT method (Population, Intervention, Comparison, Outcomes, and Time). The researchers determined the topic, and arranged foreground questions consisting of population (P), intervention (I), comparison (C), outcome (O), and time (T). Although the focus of selection on journals was prioritized for those published during pandemic, several journals were used before the Covid-19 pandemic to support or compare the analysis of this article review. This is due to differences in procedures, number of cases, and visitors that have a big and different²¹ effect between before and during the pandemic. By conducting the review and meta-analysis, we tried to get answers to what changes have occurred in nursing assessments for PD users during the Covid-19 pandemic. The results of the identification were

used to help formulate a remote nursing assessment for PD users.

Results

The research results are distributed in three parts. The first is a selection study which is presented in a table containing: source database and search keywords (Diagram 1). The second part is a PRISMA diagram containing the results of the database identification (Diagram 2). The third part is a summary table of journals extracted from PRISMA's analysis in the Included category (Table 1). During the initial document search, obtained (n=842) documents retrieved from the search engine (n=5420) documents. After being filtered, (n=186) documents were taken, where (n=33) documents were considered eligible, while (n=150) documents were deemed unfit. Of the 36 eligible documents, the last data eligible for review was (n=10). The complete data is described in the figures and diagram below:

The chart above shows the document search results from Google Scholar is the dominant (82 documents or 38%), followed by ResearchGate 42 documents (25%), SagePub (37 documents or 22%) and Semantic Scholar 25 (15%). The document screening is based on inclusion criteria, namely PD users during Covid-19. The data was filtered after deleting 673 records that did not meet the research requirements from a total of 842 records in the database. Figure 1 is the result of document screening in the early stages of the analysis of PRISMA whose data is contained in Diagram 1 below:

The diagram above shows a summary of the Identification stage where a total of 842 documents in the database, of which 186 were eligible and 673 were deleted due to duplication, non-illegality and other reasons. At the Screening stage, out of 186 documents, 36 records taken for retrieval and 150 are not included because they were not focused. Meanwhile, in the final stage (Included), there are 10 records to be reviewed after deleting 9 non-eligible documents. Table 1 below is a summary review of 10 eligible documents.

The table above is the summary of 10 documents from all eligible literatures reviewed using PRISMA Analysis. The studies were

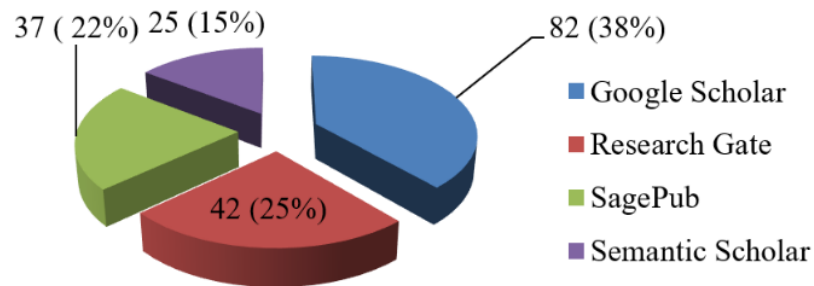


Figure 1. Study Selection

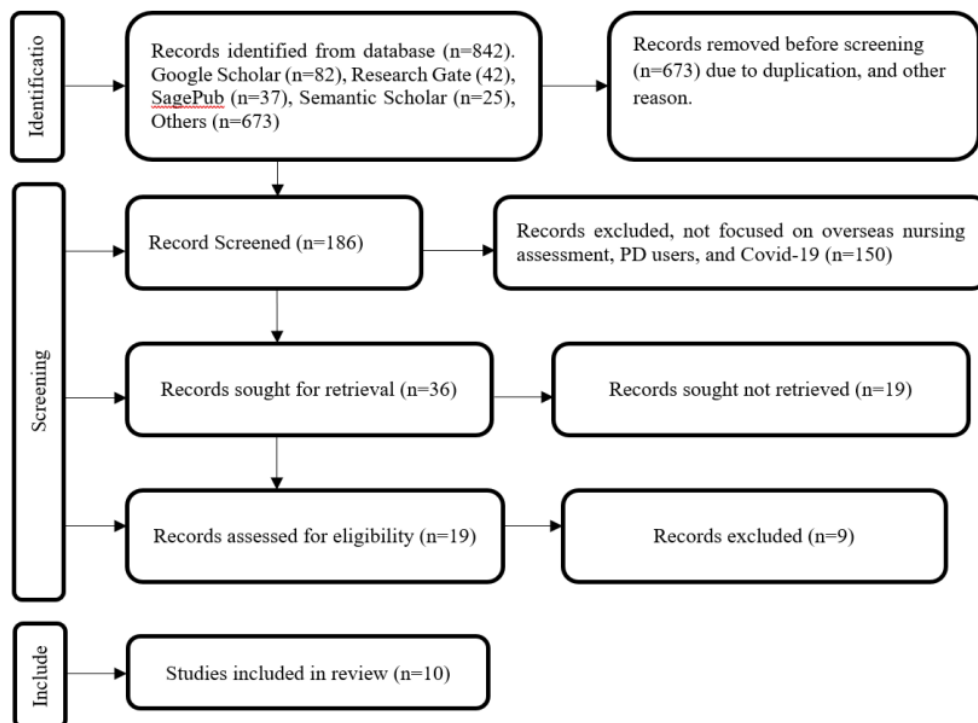


Diagram 1. Analysis of Results Based on PRISMA Diagram

conducted in eight countries (US, France, Turkey, UK, UAE, Canada, Indonesia and Worldwide countries). The ten documents were published between 2020 and 2021. The results of the extracted documents projected the impact on PD nursing staff. First, changes of procedures in caring acute peritoneal dialysis program as an alternative in handling PD users during a pandemic done by License Practical Nurses (LPN).¹⁵ Second, acute

PD during the COVID-19 pandemic providing lifesaving care to acutely ill patients could help other programs to avoid rationing dialysis care in health crises.¹⁶ including those for providing dialysis. NYU Medical Center and affiliations, including NYC Health and Hospitals/Bellevue (BH Third, preventing the spread of infection effectively for health care workers, and patients which is very important for the protection and care of patients and

Table 1. Reviewed Documents

No	Author(s), Year, Title	Country	Methods	Output
1	El Shamy ¹² al., 2020, Peritoneal Dialysis During the Coronavirus 2019 (COVID-19) Pandemic: Acute Inpatient and Maintenance Outpatient Experiences.	USA	Report	Mount Sinai Hospital is a major home to 80 dialysis unit with reporting experiences of treating patient population during crises in an outpatient setting, as well as procedures using acute peritoneal dialysis requiring renal replacement therapy (KRT) in an inpatient setting with the Acute Peritoneal Dialysis Program as alternative in handling PD users during a pandemic by utilizing the Practical Nurse License (LPN).
2	¹¹ lin et al., 2020, Acute Peritoneal Dialysis During the COVID-19 Pandemic at Bellevue Hospital in New York City	USA	Observational Study	By observation of 39 catheters were placed into 10 women and 29 acute men. PD during the COVID-19 pandemic is providing lifesaving care to acutely ill patients when expanding resources is currently impossible. Our experience can help other programs to avoid rationing dialysis treatment in health crises.
3	¹⁷ Verma et al., 2020, Caring for Dialysis Patients in a Time of COVID-19	Worldwide	Review	⁷ Preventing the spread of infection effectively for healthcare workers, and patients is very important to ensure continued delivery of dialysis to patients through measures for the protection and ²⁹ e of patients and healthcare workers on dialysis patients with suspected or confirmed COVID-19.
4	¹⁸ Ronco et al., 2020, Remote patient management of peritoneal dialysis during COVID-19 pandemic	Worldwide	Report	Preventing single patient infection and virus spread among the PD patient community and PD center with the use of telemedicine and remote management tools has allowed to continue optimal care of PD patients without a significant increase in complications or technique failures.
5	¹⁵ ennawy et al., 2020, Telemedicine versus Physical Examination in Patients' Assessment during COVID-19 Pandemic: The Dubai Experience ²	UAE	Quantitative	The study suggests ¹⁰ in the era of the Covid -19 pandemic, telemedicine offers a fast and convenient response to patient ⁹ eeds with standardization of triage guidelines, has reduced the exposure of medical workers which reduces the chance of infection as well as reduced crowds in medical centers.
6	White et al., 2020, Management of Advanced Chronic Kidney Disease During the COVID-19 Pandemic: Suggestions From the Canadian Society of Nephrology COVID-19 Rapid Response Team.	Canada	Quantitative	The findi ²³ provide advice on how to provide the best care for patients living with advanced chronic kidney disease (CKD) using different models of care, with various resources available in a COVID-19 environment. These suggestions relate to care patients with advanced CKD who would normally receive multidisciplinary CKD care and are followed in a multidisciplinary care clinic.
7	Agarwal et al., 20 ²¹ , Lessons learned and future directions in managing dialysis access during the COVID 19 pandemic: Patient and provider experience in the United States	USA	Quantitative	It was ²⁶ nd that dialysis was significantly impacted in the United States during the COVID-19 pandemic for several reasons. ASDIN COVID 19 triage documents were frequently used and 83% of respondents considered them valuable. The survey also revealed several obstacles, including logistics and financial problems causing significant service disruptions.

8	8uvier et al., 2020, France	Quantitative	Of the 3,104 patients treated by PD during this period, from 156 puskesmas, 59 people contracted COVID-19, i.e. 1.8%. Peritoneal dialysis at home reduces the risk of Covid-19 contamination, but comorbidity and associated age are high sources of mortality. Non-autonomous patients have a higher risk of contamination.
9	Yeter et al., 2020, The reliability and success of peritoneal dialysis during the COVID-19 pandemic	Quantitative, Observational study	The findings suggest all patients were asked to complete a clinical assessment form and Beck's depression and anxiety inventory. PD is a reliable and successful form of dialysis and can be administered safely even if hospital access is restricted.
10	Firdaus and 28Purwanti, 2020, Coronavirus Disease (COVID-19) in Hemodialysis Patients	Descriptive	Management of patients during hemodialysis is appropriate. 1 initial treatment such as screening patients, patients are spaced apart if necessary, isolation rooms, after completion of hemodialysis treatment and the room must be disinfected.

health workers on dialysis patients with suspected or confirmed COVID-19.¹⁷ Fourth, preventing single patient infection and virus spread among PD patient community and PD centers with the use of telemedicine enables optimal care of PD patients without 10 significant increase in complications.¹⁸ Fifth, In the era of the Covid-19 pandemic, telemedicine offers a fast and convenient response to patient needs with standardization of triage guidelines.¹⁹ Sixth, different models of care, with various resources available in an environment with COVID-19 require a multidisciplinary approach and to be followed by a multidisciplinary clinical care.²⁰ Seventh, The American Society of Diagnostic and Interventional Nephrology (ASDIN) COVID 19 triage document is frequently used and 83% of respondents consider it valuable.²¹ routine, urgent, and essential care worldwide. Dialysis access care was particularly affected due to the lack of specific guidelines regarding procedures for its creation and maintenance. Early guidance by Centers for Medicare and Medicaid was inadvertently interpreted as guidance to stop dialysis access procedures. Prompt action by professional societies was needed to furnish detailed guidance to establish essential nature of these procedures. Methods: The American Society of Diagnostic and Interventional Nephrology (ASDIN) Eighth, non-autonomous patients have a higher risk of contamination requiring more attention.²² Ninth, clinical dialysis assessment shows signs of depression and anxiety during pandemics but they can be safely

administered even if hospital access is restricted.²³ Tenth, in Indonesia an initial patient assessment of PD users is conducted by preventive measures i.e. proper screening and disinfection principle.²⁴

The principle of initial assessment of PD users is carried out by prioritizing standard policy procedures both at the central and regional levels, by prioritizing the prevention and control of the spread of infection.²⁵ Health professionals in Indonesia, including those in dialysis units as part of the international community, have also tried various treatment modalities to deal with COVID-19 in order to increase the cure rate for CKD patients during the pandemic.¹² In short, the core findings presented by the above 10 research teams in carrying out PD user remote assessments is the need for an acute PD nursing assessment in the Covid-19 pandemic era that has a system with clear activities and objectives.

Discussion

From the summary of the results of previous studies which were analyzed using the PRISMA strategy, what needs to be underlined is the main problem during the Covid-19 pandemic, namely the unavailability of standard remote nursing assessments for PD users during pandemic. PD nurses do not yet have a PD users nursing assessment system as a structured guideline during the Covid-19 pandemic era. From the nursing side, a kind of acute PD nursing program is needed to maximize PD users assessment. We suggest

a remote PD nursing assessment program that contains 4 activities:

First, PD Telenursing. Telenursing during this pandemic is highly recommended considering the risks faced by PD users. Research in Dubai stated that the effectiveness and efficiency of the procedure in handling Covid patients can be in the form of identifying symptoms, treatment plans, nursing and consultations.¹⁹ The problem is that in Indonesia, which is an archipelagic country, not all regions, especially remote areas, do not have adequate telecommunications networks, making communication difficult.²⁶ The system and related training are needed for PD nurses by utilizing applications that are widely available and easy to make on modern gadgets. At a minimum, with PD Telenursing, a group of PD users can be created, which is managed by PD nurses based on the area and the means of consulting services. Afzal et al. suggest to maximize the roles of public health nurses.²⁷ Those kind of access are more efficient and effective for PD nurses to interact with PD users.

Second, PD home delivery services. The home service model is also very effective and efficient as long as it is supported by facilities in the form of facilities and infrastructure, both software and hardware.²⁷ In big cities where transportation and communication facilities are very supportive, the realization of this PD home delivery service is realistic. Even though, there will be various challenges if applied in remote areas with minimal transportation and telecommunications facilities, such as in parts of Sumatera, Maluku, Kalimantan, and Papua.²⁸ However, PD nurses can work with public health nurses and train them on how to treat simple PD users.²⁷ Therefore, the existence of PD Home Delivery Services will greatly assist the achievement of the PD users assessment program.

Third, PD Triage Dashboard. The PD Unit during the Covid-19 pandemic is advised to have this system which contains recommendations and guidelines.²⁹ A guideline that is able to quickly identify deficiencies in the list of equipment, supplies, personnel and patients that must be implemented. In PD Triage Dashboard, it can also be distinguished PD users who suspect Covid-19 home, Suspicion Covid-19 on arrival (hospital

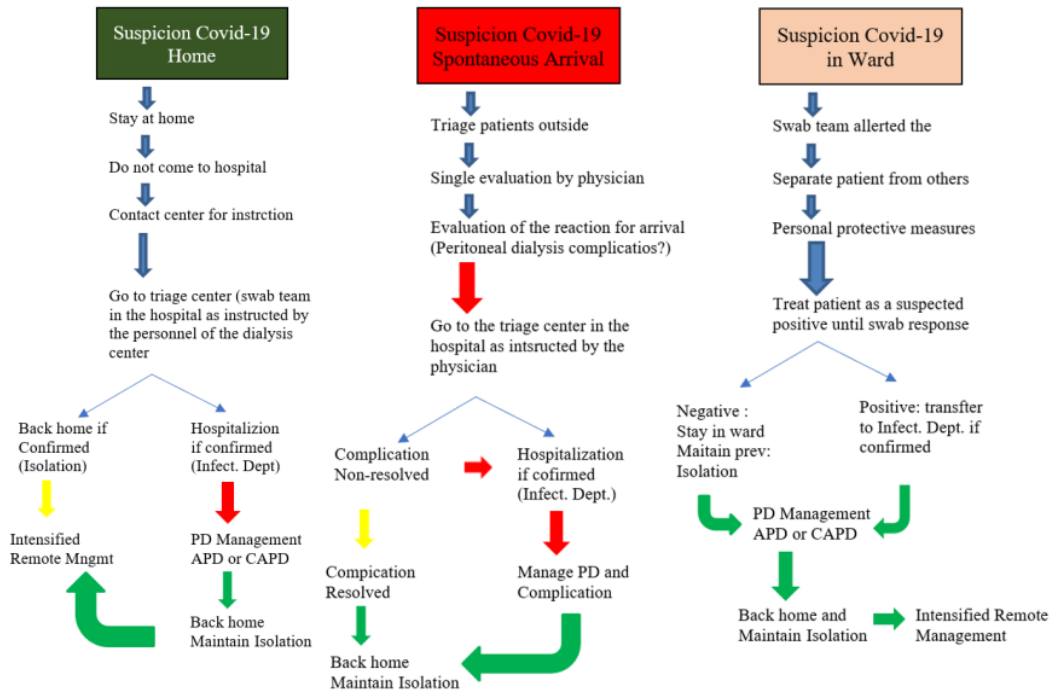
or health centers), and Suspicion Covid-19 while on Ward. PD Triage Dashboard can be applied in hospitals, clinics or public health centers.

Fourth, PD Screening List. In order to complete the PD users assessment, PD nurses need to have a screening list when conducting an assessment of PD users.¹⁸ The list contains information including: Covid-19 symptoms, vital signs, PD supplies and testing protocols created for PD users. All of these can be done by PD nurses without having to meet with PD users directly to avoid close contact during the Covid-19 pandemic.

The figure above shows the flow of handling suspected Covid-19 for PD users that can be implemented by PD nurses. In summary, remote nursing assessment of PD users by PD nurses requires actively contacting PD users, asking users to perform a number of simple procedures such as taking temperature, counting pulse, breathing, asking for complaints or using Baxter's Amia Cyclo if available, to obtain patient's daily treatment information. PD nurses need to give PD users access to talk to dieticians or social workers if necessary to achieve optimal intensified remote management results. In Indonesia, basically the PPKM program is a meaningful initial step as the realization of remote assessment program implementation for PD users. PD nurses can use the flow similar to what has been implemented by many developed countries globally. One of the standard nursing systems in Indonesia for instance is the standard operating procedures of nursing competency that can be developed individually in the workplace, as not all health care services in Indonesia have a CAPD unit.³⁰ Therefore, the introduction of the above algorithm in remote nursing assessment during pandemic in handling PD users can be done in various health care services that have CAPD units. Yet it requires training and orientation programs. The challenges are the need for funds, time, and the readiness of human resources in which they were not mentioned in the previous researchers' findings.

Conclusion

The roles and responsibilities of PD nurses during the Covid-19 pandemic are getting bigger in line with the risks they face. The magnitude of



Source: Ronco et al., (2020, p.364).

Figure 2. Algorithm for Suspected Covid-19 PD User

the workload affects the assessment of PD users where they are included in the category of high risk group because PD patients suffer from chronic kidney failure. This document review analyzed the problems faced by nurses in assessing PD users during the Covid-19 pandemic. Although several steps to prevent the spread of infection such as the PPKM program and efforts to accelerate the healing of PD users have been carried out with updated medical procedures, in Indonesia, there has been very few research on PD nursing assessment during the Covid pandemic era. Researchers offered Remote Nursing Assessment for PD users as an alternative solution. The advantages of the research are expected to help contribute to the active role of PD nurses in the initial handling of PD users during the pandemic. The weaknesses of the research are the lack of references from the nursing side related to PD nursing assessment, and it is not a direct research in the field practice. However, it is hoped that the results of the study can be a trigger for future research that brings greater benefits to PD

users in the pandemic era in particular and the PD nursing in general.

Recommendation

During the Covid-19 pandemic, we recommend the maximum use of technology information in health care services. By implementing that principle, we automatically comply with the Government rules and regulation, besides reducing cost, and human resources energy. Including in handling the PD users especially in Indonesia, a country with 3000 inhabited islands.

Authors Contributions

RA Conceptualization, data collection, analysis, writing and revising the manuscript. SH Conceptualization, data collection, analysis, writing and revising the manuscript. IJHT Conceptualization, data collection, analysis, writing and revising the manuscript. All authors have read, agreed and approved for the publication of the final manuscript.

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