

# Analysis of the Effect of Aseptik Dispensing on the Workload of Inpatient Nurses, Pharmacies and the Value of Mitra Keluarga Cibubur Hospital

Novi Gracia\*, Cicilia Windyaningsih, Ahdun Trigono

Department of Public Health, Hospital Administration Program, Respati Indonesia University, Kota Jakarta Timur, Indonesia

## Research Article

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**\*For Correspondence:**

Novi Gracia, Department of Public Health, Hospital Administration Program, Respati Indonesia University, Kota Jakarta Timur, Indonesia

**E-mail:**novi\_reza7@yahoo.com

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## ABSTRACT

The research objective was to find out that aseptic dispensing would make the work of nurses more effective (seen from the workload) on the value of the hospital. Research method with a cross sectional study design and was carried out in inpatient rooms and hospital pharmacy installations in February 2021 with 119 inpatient nurses and pharmacy personnel then analyzed quantitatively. The results of this study obtained a very good knowledge of respondents about aseptic dispensing 92%, because almost all pharmaceutical personnel have attended internal and external training and for nurses because they have received accreditation training. The readiness of human resources, facilities and infrastructure of 88.9% is good even though there are still shortages due to the problem of human resources for pharmaceutical personnel who are still insufficient if applied within 24 hours. Of the variables tested, namely the readiness of tbps, infrastructure, sterility, safety of staff all related to workload and quality of the hospital. The conclusion is that aseptic dispensing can improve quality because the workload of nurses is reduced, so that the focus is on patient care. Suggestion: Hours of administration of drugs must be carried out in an orderly manner, submission of prescriptions must be clear in writing for the solvent, dosage and method of use in order to avoid errors, shorten time, regular training, SIMRS must be in place in order to facilitate the work of nurses and pharmacies and calculate profits for the hospital in implementation this aseptic dispensing. For a 24 hour application, it is recommended that additional pharmaceutical personnel be added.

### INTRODUCTION

As one of the activities of the teaching and learning process in MARS Postgraduate Education is the creation of a research thesis, which in its implementation involves students actively in hospital administration management activities in order to find out more deeply and will continue research so that they can see results that can be used by hospitals, academics, students and also researchers to continue further research. According to ASHP, 1995 (American Society of Health System of Pharmacy) said mixing sterile preparations or aseptic dispensing is a series of changes in the form of the drug from the initial condition into a new product by going through a dissolution process or the addition of other ingredients which are carried out in a sterile or aseptic manner by pharmacists in pharmacy installations, so it is very necessary to implement aseptic dispensing in hospitals [1].

Pharmaceutical installations are stated in (Permenkes No. 3 Hospital Classification and Licensing, 2020) Article 14 paragraph 4 is a non-medical service. Pharmaceutical services are direct and responsible services to patients related to pharmaceutical preparations with the aim of achieving definite results to improve the quality of life of patients. Regulation of the Minister of Health of the Republic of Indonesia Number 72 concerning Standards Pharmaceutical Services, 2016, So in accordance with this function, it will be able to protect patients and the public in the use of drugs that are not in accordance with the provisions so that they will be able to prioritize patient safety [2].

In Indonesia, hospitals are required to carry out RS accreditation standards, one of which is to carry out aseptic dispensing according to applicable rules and guidelines, SIMRS (Hospital Information System) to the maximum so it is hoped that by using this SIMRS there will be energy and time efficiency. This efficiency will be utilized to carry out the function of clinical pharmacy services intensively. Sterile dispensing is a form of pharmaceutical service that is carried out in hospitals, this is in accordance with Decree of the Minister of Health of the Republic of Indonesia No. 1197 concerning Pharmacy Service Standards in Hospitals, 2004 and must be carried out centrally which is carried out at the Hospital Pharmacy Installation which has the aim of to prevent infections originating from hospitals (nosocomial infections), contamination/contamination of preparations, exposure to staff and the environment, to prevent errors in drug administration, so that the quality of the preparations is guaranteed. And in its implementation, it is very necessary to have trained pharmaceutical personnel, facilities and equipment and special handling procedures. Mitra Keluarga Cibubur Hospital is a hospital that has provided services to the community by focusing on customers. And knowing that many hospitals are developing, it is necessary to always pay attention to maintaining the quality and quality of services in accordance with the KARS SNARS accreditation, the Mitra Keluarga Cibubur Hospital will try to always complete and follow the rules set out in the SNARS.

Pharmaceutical Services and Drug Use (PKPO), 2019 which requires pharmacy installations to apply: Aseptic dispensing in order to ensure the safety, quality, benefits, and efficacy of drugs prepared and delivered to patients, hospitals are required to prepare and deliver drugs in a safe environment for patients, staff, and the environment and to prevent contamination of the place where the drug is prepared must comply with statutory regulations-Invitation and professional practice [3].

**Formulation of the problem:** Hospitals are required to carry out hospital accreditation standards, one of which must carry out aseptic dispensing according to applicable rules and guidelines, but in reality, most have not implemented aseptic dispensing optimally, because they have not fully explored the function of aseptic guidelines.

Good service and according to applicable guidelines greatly affect customer satisfaction, so hospitals must be able to control services to achieve patient satisfaction. Currently, based on applicable regulations, all hospitals must mix

drugs with trained personnel and in a sterile room according to applicable regulations. Therefore, more in-depth research is needed to find out:

- What is the description of aseptic dispensing, readiness of human resources, sterility and stability, workload (nurse workload including drug administration, pharmacy staff in pharmacy installations, human resource security, and value (quality) in inpatient rooms and pharmacy at Mitra Keluarga Cibubur Hospital.
- What is the relationship between aseptic dispensing on sterility, stability in inpatient nurses and pharmacists at Mitra Keluarga Hospital Cibubur.
- How is the relationship between the readiness of human resources and the sterility and stability of drugs in the inpatient room and pharmacy at Mitra Keluarga Hospital Cibubur.
- How is aseptic dispensing related to the readiness of human resources (inpatient nurses and pharmacists) at Mitra Keluarga Hospital Cibubur.
- How sterility and stability relate to the workload of HR (inpatient nurses and pharmacists) at Mitra Keluarga Hospital Cibubur.
- How is the readiness of nurses and pharmacists related to the HR workload in the inpatient room, Mitra Keluarga Hospital Cibubur.
- How does the safety of human resources (nurses and pharmacists) relate to the value in the inpatient room at Mitra Keluarga Hospital, Cibubur.
- How is aseptic dispensing related to values in the inpatient room at Mitra Keluarga Hospital Cibubur.
- How is HR readiness related to the value of the inpatient room at Mitra Keluarga Hospital Cibubur.
- What are the factors that most contribute to the value at Mitra Keluarga Hospital Cibubur.

### Benefits of research

**Benefits to hospitals:** The results of this study are expected to be used as a reference material to improve the service system so as to reduce the time of administering drugs, the workload of nurses in distributing drugs is reduced so that they can provide services to patients with more focus and attention.

And maintain the security of the resources involved with the service because with aseptic dispensing the length of contact with the patient is reduced during drug administration and also during mixing so that the risk of infection and exposure to substances in the resource can be minimized <sup>[4]</sup>.

**For educational agencies:** This study is used as reading material and literature and can be used as a reference in developing research on aseptic dispensing at the Pharmacy Installation of Mitra Keluarga Hospital, Cibubur.

**For researchers: Aseptic dispensing.**

**For the community, especially inpatients:** The results of the study are expected to improve services to patients by providing drugs according to the required dose, ensuring the sterility and stability of the drug.

**The scope of research:** In this study, researchers carried out restrictions on inpatient rooms and pharmacy installations at Mitra Keluarga Cibubur Hospital which will be carried out in February 2021, which will analyze aseptic dispensing, nurse workloads including drug administration, pharmacist workload in pharmacy installations, sterility and stability. drugs in the inpatient room, safety of inpatients from hazardous substances, errors in administering drugs in the inpatient room and the value (quality of service) at Mitra Keluarga Cibubur Hospital?

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**Research design:** This research is a quantitative research, Sugiyono, is research based on the philosophy of positivism, which is used to examine certain populations or samples. The sampling was done randomly, then the data was collected using research instruments and statistical quantitative data analysis aimed at testing the predetermined hypothesis [5].

This research design is an observational analytic with a cross-sectional study approach (cross-sectional study), namely the researcher will make observations and measurement of a variable at a certain time. The meaning of a time does not mean that all subjects will be observed exactly at the same time, but has the intention that each subject is only observed once and the measurement of the subject variables is carried out at the time the research is carried out. Observational analytic research aims to see the relationship between variables, and then analyze all the data that has been collected by Sastroasmoro and Ismael. This study aims to examine the relationship between aseptic dispensing, nurse workload including drug administration, pharmacy staff workload in pharmacy installations, sterility and stability of drugs in inpatient rooms, safety of inpatient and pharmacy staff from hazardous substances, safety against infection, errors in drug administration in inpatient rooms and values at Mitra Keluarga Hospital Cibubur [6].

**Time and place of research:** This research was carried out at the Inpatient and Pharmacy Installation of Mitra Keluarga Hospital Cibubur and the time of the study was in.

### MATERIALS AND METHODS

#### Population and research sample

**Research population:** The population is all objects or research subjects that have certain numbers and characteristics set by the researcher to be studied and a conclusion is drawn by Nursalam. The total number of nurses at Mitra Keluarga Cibubur Hospital is 167 people and pharmacists 28 people, but the total population taken is nurses who do repetitive work while being hospitalized and pharmacy staff at Mitra Keluarga Cibubur Hospital in 91 nurses and 28 pharmacists.

**Research sample:** In this study, the total population technique is used, namely the selection of samples by determining subjects who meet the research criteria to be included in the study for a certain period of time so that the required number of respondents is met. The sample is part of the number and characteristics possessed by the population. If the population is large and it is impossible for the researcher to study all of the existing population due to limited funds, manpower and time, the researcher will use a sample taken from that population. And what is learned in the sample, the conclusions will be applicable to the population. For this reason, samples from the population must be truly representative (can represent). If the sample is not representative, it will get the wrong conclusion. Sampling techniques can be divided into two, namely probability sampling and non-probability sampling by Sugiyono. The sample in this case are nurses and pharmacy staff at Mitra Keluarga Hospital Cibubur [7].

**Inclusion and exclusion criteria inclusion criteria:** Clients aged 20-55 years who work as nurses in inpatient rooms and pharmacists in hospitals. Cibubur Family Partner.

Nursing clients who have received information about aseptic dispensing and are tasked with administering drugs.

Pharmacist clients who have received internal and external training on aseptic dispensing.

**Exclusion criteria:** Clients who have never served in the distribution of drugs in the inpatient room

Pharmacist clients who have never received external or internal training on aseptic dispensing

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Clients who are not willing to be respondents.

**Sample size:** The population in this study were 91 paramedics in the inpatient ward and 28 pharmacists in the pharmacy installation of Mitra Keluarga Hospital Cibubur. So the total population is 119 people.

The number of samples is nurses and pharmacists in hospitals. Mitra Keluarga Cibubur uses the total population sampling method in which all samples from a population are based on available information, so that their representation of the population can be accounted for. Because the samples collected met the inclusion criteria, they were taken as a whole as a sample. The advantage is that the last selected units can be selected so that they have many similarities. The disadvantage is that it creates variability and bias in the estimation of the population and sample selected.

**Data collection method:** The research instrument is a questionnaire sheet sent via google form, a formal data collection tool to research respondents to answer questions in writing by Nursalam. Questionnaires are prepared regularly. The questions in this questionnaire relate to the application of aseptic dispensing in pharmacy installations to the workload of nurses, pharmacy staff, pharmaceutical logistics stocks, drug sterility and stability as well as hospital values at Mitra Keluarga Hospital Cibubur which consists of 36 questions that focus more on the effect of postnatal care. the application of open question aseptic dispensing using a rating scale. The reason is that the type of rating is reflected in the diversity of scores with the use of a scale ranging from 1 to 4, thus enabling respondents to answer according to what has been applied by them closer to the actual reality. A standardized questionnaire instrument with a Pearson product moment value R.

In this research will collect the desired information, by means of two types of data sources, namely:

**Primary data:** Data taken directly from respondents through filling out a questionnaire with guided questions.

**Secondary data:** Data taken directly through HRD Mitra Keluarga Hospital Cibubur.

According to Sugiyono data processing will be carried out if all data is collected by going through several steps, namely:

**Checking (Editing):** At this stage the aim is to retrieve the data that has been collected by checking the completeness, filling errors and concentration in each answer to the question.

**Scoring:** In this study, the data was assessed by scoring questions related to the application of aseptic dispensing to the workload of inpatient nurses and pharmacists, pharmaceutical logistics, the value of Mitra Keluarga Hospital Cibubur.

**Giving code (Coding):** Coding is the giving of codes to respondents' answers, which has the aim of making it easier for researchers to transfer data to storage facilities, namely computers. After the data has been collected and edited, the next step is to code the data which aims to assist in processing the data. The answers are coded directly on the questionnaire sheet.

**Data tabulation (Tabulating):** In this stage, namely entering the research data into a table in accordance with the criteria. The table created will make it easier to group the data so that it is easy to read and understand then the researcher will arrange the data so that it will be easier when processing data.

- Processing Data (Processing) Processing data using answers from respondents that have been made in the form of groups of numbers and stages then it will process the data using the SPSS version of the application 25.0 for easy analysis.

- **Cleaning the data (Cleaning)** This stage is the stage of cleaning the data by checking the data that has been entered again and checking the data whether there are errors or not, re-examination is carried out at the coding and scoring stages.

**Data collection instruments:** The data collection instruments are Tools that are selected and will be used by researchers in data collection activities so that these activities are arranged systematically and easily.

Aids in data collection methods are tools in the form of objects or tools, such as checklists, questionnaires, interview guides, photos and so on Sastroasmoro and Ismael. Questionnaire is one of the tools in data collection which later the data will be processed to obtain certain information and is a technique or method of collecting data indirectly (researchers do not directly conduct questions and answers with respondents). The data collection instrument used in this study was a questionnaire.

The research instrument used is a questionnaire that has been tested for validity and reliability at RSIA Permata Sarana Husada.

### RESULTS AND DISCUSSION

**Univariate results of research respondents:** In this study there were 119 populations and all of them filled out the questionnaire and included in the inclusion criteria so that samples were taken more than the minimum sample that should have been 92 samples. And from the data collected in this study consisted of 112 female respondents (94.1%) and 7 male respondents (5.9%). With 87 respondents. (73.1%) are married and 87 people (73.1%) or 30 respondents (25.2%) are not married and a small proportion are divorced, namely 2 respondents (1.7%). While the age group is dominated by the age group of 31-40 years with 55 respondents (46.2%) and there are 2 people who are more than 50 years old (1.7%). The sample taken is mostly paramedics, namely 91 respondents (76.5%) which are divided into various treatment rooms and with the highest number of nurses in the NSD room, amounting to 25 people (21%) and pharmacy by 28 respondents (23.5%) and with the most positions being as executor of 74 respondents (62.2%). Meanwhile, from the length of work the most were 9-<12 years as many as 43 people (36.1%) and some even had more than 15 years as many as 8 people (6.7%).

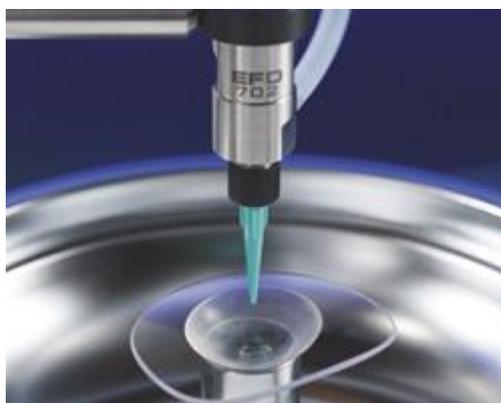
**Analysis of knowledge of aseptic dispensing:** In the univariate study, 92% positive perception of knowledge about aseptic dispensing was obtained, respondents already had good knowledge about aseptic dispensing, this was due to SNARS accreditation.

- So that paramedics and pharmaceutical staff already know well about aseptic dispensing even though it has not been running optimally because it is constrained by the number of Pharmaceutical HR and the flow and SOPs that have not been socialized to the fullest. However, there is still a negative perception of the percentage of 8%, this is not too big a number because it can be overcome by providing training on a regular basis this problem will be resolved. Knowledge of aseptic dispensing with a high positive perception because almost all of the pharmacy staff have received training both externally and internally. And for the paramedics themselves to get this information at the time of accreditation and also before this research was carried out, they had been given education about aseptic dispensing techniques which they usually do in the inpatient room only with aseptic dispensing, no longer paramedics in the inpatient room who perform but carried out by pharmacists. Compared to previous research by Fradita and Anisyah stated that knowledge about aseptic dispensing was 60% very good, 33% good and 7% adequate. At Mitra Keluarga Hospital, Cibubur already has a fairly good number of aseptic dispensing knowledge. Aseptic dispensing must be carried out centrally at the pharmacy installation, there are still 8.4% of those who disagree,

aseptic dispensing carried out at the pharmacy installation must use PPE and must be carried out in the pharmacy installation in a special dispensing place, cannot be carried out in any pharmacy area still disagree 19.3%.

**Effect of HR readiness, facilities and infrastructure:** The univariate research carried out gave positive perceptions of the readiness of human resources, facilities and infrastructure of 88.9%. This is indeed due to the fact that the pharmaceutical staff for dispensing has not yet been devoted. So it still can't be done 24 hours. In this case, for the night shift, nurses were still being assisted during the study, negative perceptions were still quite high, especially regarding the number of pharmacists to perform aseptic dispensing, namely 15% with a total negative perception of 11.1%. Regarding the facilities and infrastructure in the aseptic dispensing room at Mitra Keluarga Hospital Cibubur, it is quite good at 88.9% when compared to research by Fradita and Anisyah which says <50%. The number of pharmacists for aseptic dispensing Figure 1 is sufficient at this time, it turns out that many do not agree with 84.9%. The aseptic dispensing room cannot be combined with other rooms in the pharmacy installation, there are still 9.2% of those who disagree, and there is a flow, SOP and job description of aseptic dispensing 18.4%.

**Figure 1.** Aseptic dispensing valve.



**Effect of drug sterility, stability and medical error:** Positive perception about sterility, stability, medical error is good enough which is 71.4% and negative perception is 28.6%, this is because they are still accustomed to storing leftover drugs in the inpatient refrigerator, which should be kept to a minimum. The negative perception for the question of whether drugs can be stored in the inpatient refrigerator is still quite high at 58%.

Pharmacists are more able to do more focused drug preparation after the application of 13.5% aseptic dispensing. After aseptic dispensing, errors in drug administration and dosage became smaller in 14.2%, the remaining injection drugs should not be stored in the refrigerator in the inpatient room to be given the next schedule even though aseptic dispensing had been applied, the number of respondents who did not agree was 58%.

**Effect on workload:** The results of the univariate study showed that 73.9% of respondents felt that their workload was reduced by the application of aseptic dispensing because the drugs had been prepared by pharmacists. However, the negative response is still quite high, which is 26.1% because when the research was conducted for the night shift, nurses still received assistance, so of course, for certain rooms, they did not feel like they had reduced their workload, especially in the night shift. The room occurred in the ICU, IMC but for the ordinary ward, most of the nurses felt more comfortable with the implementation of aseptic dispensing.

After aseptic dispensing, it became easier to dispense drugs when dispensing 23.5%, with aseptic dispensing, dispensing drugs was faster and more effective, disagreeing 20.2%. After the application of aseptic dispensing, the number of respondents disagreed 35.3%, after aseptic dispensing the integration of nurses and pharmacy was better, respondents who disagreed 17.7%, nurses worked more regularly disagreed 34.4%.

**Influence on HR security:** The results of the univariate study obtained a fairly high positive perception of 88.2% because with the application of dispensing. Aseptic treatment reduces prolonged contact with the patient while administering the drug. But the negative perception that arises is 11.8%, this can be reduced by regular education or training so that HR is increasingly aware that the safety will be higher if the implementation of aseptic dispensing can run well. After aseptic dispensing, because the time for distributing drugs was faster, so that it was safe for nurses, there were still 21% disagree.

**Influence on value:** The results of univariate research get positive perceptions that arise, namely 79.7% of the hospital's value because nurses can concentrate more on providing services and providing better information to patients because their workload is reduced. The most negative perceptions for questions about drugs that are the same type but can be shared with other patients at the same time are 37%.

After the application of aseptic dispensing, they can focus more on providing care to patients, there are still 16% disagree, nurses have more time to introduce themselves, 19% disagree, nurses are more able to convey greetings to patients who disagree 16.3, nurses are more able to behave friendly to patients disagree 18.1%, Nurses are more able to provide information on actions and treatment to patients who do not agree 17.6%, In financial calculations because drugs that are not full dose can be shared with other patients on the same therapy but the cost is fixed for full dose so that it increases the value against rs disagree 36.9%.

### CONCLUSION

Overview of aseptic dispensing, readiness of human resources, sterility and stability, workload (nurse workload including drug administration, pharmacy staff in pharmacy installations, safety of human resources, and value (quality) in the ward Hospitalization and pharmacy at Mitra Keluarga Hospital Cibubur. Aseptic dispensing is 92%, respondents already have good knowledge about aseptic dispensing. There is a relationship between aseptic dispensing on sterility, stability in inpatient nurses and pharmacists at Mitra Keluarga Hospital Cibubur  $R^2$  value. Relationship with HR readiness with sterility and drug stability in inpatient rooms and pharmacy at Mitra Keluarga Hospital Cibubur with  $R^2$  0.327 and sig 0 indicating a relationship. Aseptic dispensing is related to the readiness of human resources (inpatient nurses and pharmacists) Mitra Keluarga Hospital Cibubur is related to sig count=0. Sterility and stability are related to HR Workload (inpatient nurses and pharmacy staff) Mitra Keluarga Hospital Cibubur, sig count=0 which means related. Readiness of nurses and pharmacists related to HR workload in inpatient rooms, Mitra Keluarga Hospital Cibubur, sig count=0 means related. Security of human resources (nurses and pharmacists) is related to Value in the inpatient room at Mitra Keluarga Hospital Cibubur, sig count=0 means related. Aseptic dispensing is related to the value in the inpatient room at Mitra Keluarga Hospital Cibubur, sig count=0 means related. HR readiness relates to the value of the inpatient room at Mitra Keluarga Hospital Cibubur, sig count=0 means related Factors that contribute to the value at Mitra Keluarga Hospital Cibubur. The factors that most contribute to the value at Mitra Keluarga Hospital Cibubur are sterility, stability and medical error with an  $R^2$  of 55%. If things. If this is done well, the quality of service from the hospital will be maintained.

### REFERENCES

1. Goedecke T, et al. Arlett Medication Errors: new EU good practice guide on risk minimization and error prevention. *Drug Saf.* 2016; 39(6):491-500.
2. Brown JN, et al. Focus: drug development: medication safety in clinical trials: role of the pharmacist in optimizing practice, collaboration, and education to reduce errors. *Yale J Biol Med.* 2017; 90 (1):125.
3. Alexander JH, et al. Documentation of study medication dispensing in a prospective large randomized clinical trial: experiences from the ARISTOTLE Trial. *Randomized Controlled Trial.* 2013; 166(3):559-65.
4. Baten JM, et al. Use of a vaginal ring containing dapivirine for HIV-1 prevention in women. *N Engl J Med.* 2016; 375 (22):2121-32.
5. Alsulami Z, et al. Double checking the administration of medicines: why is the evidence? A systematic review. *Arch Dis Child.* 2012; 97(9): 833-37.
6. Andrilla CHA, et al. Tracking the geographic distribution and growth of clinicians with a DEA waiver to prescribe buprenorphine to treat opioid use disorder. *J Rural Health.* 2022; 38(1):87-92.
7. Cooper HLF, et al. When prescribing isn't enough-pharmacy-level barriers to buprenorphine access. *N Engl J Med.* 2020; 383(8):703-705.