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# Evaluation of the Use of Antidiabetic Drugs in Patients of Back-Referral Program at the Demak District Pharmacy

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## ABSTRACT

Drugs are one of the important components of the Back-Referral Program (BRP), hence the guarantee of the availability of BRP drugs in pharmacies is a factor in the success of BRP implementation. The purpose of this study was to determine the consumption of antidiabetic drugs using ATC/DDD and 90% DU methods, to analyze the cost of consuming antidiabetic drugs, and to determine the suitability of antidiabetic drugs with the National Formulary. This study was an observational study with a cross-sectional design and retrospective data collection. The study was conducted at 6 BRP pharmacies, namely Pharmacy A, Pharmacy B, Pharmacy C, Pharmacy D, Pharmacy E, and Pharmacy F in the area of Demak Regency. The antidiabetic drug consumption data was obtained from BRP patient prescriptions from July 2020 to June 2021. The cost data were obtained based on prices in the JKN drug e-catalog system at BRP pharmacies in the area of Demak Regency. In analyzing the data, the researcher calculated DU at 90%, the cost of drugs included in the DU segment at 90%, and the suitability of drugs with the National Formulary. The results showed that the highest consumption of antidiabetic drugs in Back-Referral Program (BRP) pharmacies in the area of Demak Regency was glimepiride (54.72%) and metformin (31.01%). The highest cost of consuming antidiabetic drugs per DDD was insulin (Rp.17,639.73), the lowest cost was glimepiride (Rp.65.35), the total cost of antidiabetic drugs was Rp.53,509,090, and the incompatible drug with National Formulary was pioglitazone. In general, the highest consumption of antidiabetic drugs at six Back-Referral Program (BRP) pharmacies in the area of Demak Regency, which was included in the DU segment 90%, were glimepiride and metformin, and the suitability of drugs with the National Formulary has not reached 100%.
**Kata Kunci:** ATC/DDD; DU 90%; Diabetes mellitus; Back-Referral Program (BRP)

## INTRODUCTION

The Social Security Administration for Health, or *Badan Penyelenggara Jaminan Sosial Kesehatan* (BPJS Kesehatan) was established in January 2014. The purpose of the establishment of BPJS Kesehatan is to provide health insurance to the community which is a basic need for every Indonesian citizen. BPJS Kesehatan cooperates with quality health facilities to be able to provide quality health services[1]. BPJS Kesehatan has a flagship program namely the Referral Program (BRP), which can improve the quality of service quality for participants and can facilitate access to health services for people with chronic diseases in a stable condition on the recommendation of specialist/sub specialist doctors. BRP patients can obtain drugs at pharmacies/pharmacy depots on the BPJS Kesehatan network[2]. Provisions in the service of BRP drugs include BRP drugs given for needs for 30 days and must be in accordance with the National Formulary (Fornas)[2]. However, the conditions in the field indicate that there is often a shortage of BRP drugs, this is supported by a research conducted by Murni, *et al.*[3], namely, the occurrence of vacancies for BRP drugs at the Sana Farma Pharmacy, Semarang city, Central Java province.

Diabetes mellitus in Indonesia is currently a serious problem. Most people with diabetes mellitus are type 2 diabetes mellitus group. Diabetes mellitus is a chronic disease that can cause various complications. This can be prevented by giving long-term medication to control blood sugar[4]. Therefore, it is important to evaluate the use as a basis in the selection to ensure that drugs are used appropriately, safely, and efficiently[5]. Based on the report of the Central Java Provincial Health Office in 2020[6] the prevalence of

diabetes mellitus patients was the highest in Central Java, one of which was in the district of Demak. The number of people with diabetes mellitus in Demak district in 2018 was 2,220 people[7]. The prevalence of diabetes mellitus experienced a very significant increase in 2019 as many as 18,116 people[6].

In the era of the National Health Insurance (JKN), the evaluation of drug use or Evaluasi Penggunaan Obat (EPO) became a form of monitoring and assessment of pharmaceutical services in quality control. The patterns of use of anti diabetic drugs in BRP patients are aimed to see the most consumed drugs that can be used as a benchmark in planning and procuring drugs[8]. In addition, it can be used in making a drug demand plan or *Rencana Kebutuhan Obat* (RKO) so that a drug selection process is needed based on the need for use patterns in achieving efficient drug use. Evaluation of drug use or *Evaluasi Penggunaan Obat* (EPO) can be seen from the pattern of drug consumption by assessing the drugs included in Drug Use 90% (DU90%). The EPO unit recommended by the World Health Organization (WHO) is the Anatomical Therapeutic Chemical (ATC)/Defined Daily Dose (DDD) method. The ATC/DDD classification system is a system for assessing patterns of drug use both qualitatively and quantitatively[9].

Several studies related to anti diabetic EPO in patients with type 2 diabetes mellitus had been conducted including by Muthoharoh, *et al.*[10] and Oktaviani, *et al.*[11]. Data analysis of these research were descriptive. Other studies using the ATC/DDD and 90% DU methods had also been carried out by Tahar, *et al.*[12]. However, studies related to EPO that are more focused on BRP patients as well as reviewing the costs and suitability of drugs with Fornas have not been found. Therefore, due to the background of the above problems, it is important to do EPO in the JKN era which can be utilized by the pharmacies studied at the regional or national level as an illustration and input in planning the drug needs of BRP patients so that the fulfillment of BRP drugs is effective and efficient.

## METHOD

The type of research was an observational study with cross sectional design by evaluating the consumption of anti diabetic drugs in PRB patients in pharmacies in Demak district. The selection of pharmacies as research location was based on the BRP pharmacies of the BPJS Kesehatan network in Demak district and the pharmacies that gave permission to conduct research. Based on the data from BPJS Kesehatan in 2021, it shows that there were 7 BRP pharmacies in Demak district including Pharmacy A, Pharmacy B, Pharmacy C, Pharmacy D, Pharmacy E, and Pharmacy F from the same management, and one pharmacy from a different management. The subjects in this study were prescription data for adult diabetes mellitus patients who visited the BRP Pharmacies in Demak district in the period July 2020-June 2021. This research has obtained ethical clearance with number 336/X/2021/Commission on Bioethics, Faculty of Medicine, Sultan Agung Islamic University, Semarang. The inclusion criteria in this study were adult patients aged ≥ 18 years with a diagnosis of type 2 diabetes mellitus who followed BRP, while the exclusion criteria included incomplete or illegible prescription data. The data from the prescriptions taken included the name of the drug, the strength of the drug, the number of drugs, the dose of the drug received by the patient, sex, and age of the patient. The sample size in this study was obtained using the slovin formula:

$$n = \frac{N}{1 + N(e^2)}$$

With a confidence level of (e) 95%. The calculations were carried out on each population of the 6 BRP pharmacies studied during the period of July 2020-June 2021 so that a total sample of 2,200 prescriptions was obtained. Sampling on the recipe with the type of *non-probability sampling*. The technique used was a purposive sampling technique, namely determining the sample by taking research subjects based on inclusion and exclusion criteria. The conformity assessment was based on the 2020 Back-Referral Program National

**Table I. The number of samples in 6 (six) BRP pharmacies in the Demak district**

| Pharmacy name | Number of prescriptions (N) |
|---|---|
| A | 343 |
| B | 386 |
| C | 358 |
| D | 357 |
| E | 375 |
| F | 381 |

Formulary Data and the therapeutic management of the Indonesian Endocrinology Association (PERKENI) in 2021[4].

Data analysis used the ATC/DDD method which was integrated with 90% DU based on the guidelines of the WHO Collaborating Center for Drug Statistics Methodology (https://www.whocc.no/atc_ddd_index/). The data presented in tabular form included data on the quantity of anti diabetic drug use and drug consumption patterns as well as the value of DDD/1,000 patient days. The steps in calculating drug consumption with the DDD unit were looking for the ATC code for each drug based on the ATC/DDD index. The calculation of the value of DDD and DDD/1,000 patients for outpatient or community drug consumption data used the formula:

$$Penggunaan\ Obat\ dalam\ DDD = \frac{Kualitas\ penggunaan\ Obat}{DDD}$$

$$DDD\ per\ 1000\ pasien\ rawat\ jalan = \frac{Total\ DDD}{Total\ Pasien}\ x\ 1000$$

then the DDD value/1,000 patients were sorted from the largest to the smallest value and the consumption of drugs that enter the DU segment 90% and 10% were calculated[9]. and, the suitability of prescribing anti diabetic drugs in BRP patients was analyzed by looking at the percentage of drug suitability based on the 2020 National BRP Fornas.

## RESULT AND DISCUSSION

### Overview of Research Results

This research was conducted at BRP pharmacies in the Demak district, 6 (six) pharmacies were obtained as research objects from the same management. The study was conducted for 1 month and obtained a total sample of 2,200 recipes in the period July 2020-June 2021. The number of prescriptions taken from the 6 pharmacies can be seen in Table I.

From the data, the number of research results in each pharmacy is different, then by using the slovin formula, the data was obtained as shown in Table I.

### Characteristics of Research Subjects

The characteristics of research subjects in BRP patients with type 2 diabetes mellitus based on the sex and age were aimed at comparing the percentage of prescriptions for diabetes mellitus patients at PRB pharmacies in the district of Demak. Age and sex are risk factors for diabetes mellitus[13]. *According to the International Diabetic Federation (IDF) in 2017*[14], *several risk factors for diabetes mellitus include genetics, low physical activity, age 45 years and over, lifestyle, unbalanced diet (obesity)*, stress, and hypertension. The characteristics of research subjects can be seen in table II.

Table II shows that prescribing in patients with type 2 diabetes mellitus is dominated by women compared to men. This study is in accordance with Widiyoga, *et al.*[15], which states that patients with type 2 diabetes mellitus are mostly female with a percentage value ratio of 67.5% to 32.4%. One factor that allows this to happen is that women's metabolism is slower than men's, so women are more at risk of developing obesity supported by an unbalanced diet[16]. Obesity is more at risk even though the age has not reached above 45 years because it can trigger an increase in blood sugar based on body fat[17]. According to Imelda[18] women tend to have

**Table II. Characteristics of research subjects based on sex and age in 6 (six) BRP pharmacies in the Demak district.**

| Characteristics | N (Number of prescription) | Percentage (%) |
|---|---|---|
| **Sex** | | |
| Male | 651 | 29.6% |
| Female | 1,549 | 70.4% |
| **Age (years)** | | |
| <40 | 61 | 2.8% |
| 40-49 | 208 | 9.5% |
| 50-59 | 1,285 | 58.4% |
| 60-69 | 448 | 20.4% |
| 70-80 | 184 | 8.4% |
| >80 | 14 | 0.6% |

higher cholesterol than men supported by low daily activities. Physical activity helps improve the quality of blood vessels so that it helps improve metabolic processes, one of which is increasing insulin sensitivity. The amount of fat in men is about 15-20% of body weight while women reach 20-25% of body weight so that women are 3-7 times more at risk of developing diabetes mellitus.

The results shows that the highest prescribing in patients with diabetes mellitus occurred in the age range of 50-59 years, while those aged over 80 years had the lowest percentage values. This is in accordance with the report from the Center for Data and Information (InfoDatin)[19]. diabetes mellitus that along with increasing age there is an increase in the prevalence of people with diabetes mellitus which reaches its peak at the age of 55-64 and decreases after passing that age range. Research conducted by Hayima[20] showed that the highest diabetes mellitus sufferers were in the age range of 55-64 years at 6.3% and those aged 65-74 were 6.0%. The increasing prevalence of people with diabetes mellitus over the age of 50 years is due to an increase in the risk of diabetes mellitus with age, a decrease in body function, especially in pancreatic beta cells (the number of beta cells produced is reduced) producing insulin which functions in glucose metabolism. Another cause is a decrease in physical activity which rarely causes an increase in blood glucose supported by the frequency of irregular eating patterns causing a higher risk of developing diabetes mellitus and increasing age increases the risk of type 2 diabetes mellitus this is related to the composition of increased fat accumulated in the abdomen. This causes central obesity and triggers insulin resistance. The aging process in a person causes a decrease in mitochondrial activity in muscle cells by 35% so that this supports an increase in body fat percentage of about 30% which causes insulin resistance[22212718]. The data from the characteristics of the subjects of this study did not show the percentage of patients in the sample based on sex and age. The data of this study only focused on calculating the consumption of anti diabetic drugs and the number of drug items in BRP patients. Therefore, this result is a general description of the prescribing pattern of patients who make visits to BRP pharmacies in Demak district during the period June 2020-July 2021.

### Evaluation of the Quantity of Use and Profile of DU 90% Anti diabetic Drugs

Table III shows that the highest consumption of anti diabetic drugs in type 2 diabetes mellitus patients at BRP pharmacies in the Demak district is glimepiride (159,937.4 DDD/1,000 patient days). DDD per 1,000 outpatients is the drug used per 1,000 patients. According to the WHO reference the DDD value of glimepiride is 2 mg. The calculation

**Table III. Analysis of consumption patterns of antidiabetic drugs in 6 (six) BRP pharmacies in Demak district**

| Prescribed drug name & Strength | ATC Code | DDD/1,000 outpatient days | Percentage (%) | Cumulative percentage (%) | DU 90% |
|---|---|---|---|---|---|
| Glimepiride tab 1 mg<br>Glimepiride tab 2 mg<br>Glimepiride tab 3 mg<br>Glimepiride tab 4 mg | A10BB12 | 159,937.4 | 54.72 | 54.72 | 90% |
| Metformin tab 500 mg<br>Metformin tab 850 mg | A10BA02 | 90,619.33 | 31.01 | 85.73 | |
| Gliklazid tab 80 mg | A10BB09 | 18,833.54 | 6.44 | 92.17 | 10% |
| Akarbose tab 50 mg<br>Akarbose tab 100 mg mg | A10BF01 | 11,235.61 | 3.84 | 96.02 | |
| Glimepiride tab 5 mg | A10BB01 | 5,651.82 | 1.93 | 97.95 | |
| Novomix® (NPH) injection 300U/3 ml | A10AD05 | 1,553.64 | 0.53 | 98.48 | |
| Lantus® (insulin glargine) injection 300U/3 ml | A10AE04 | 1,432.52 | 0.49 | 98.97 | |
| Glikuidon tab 30 mg | A10AE04 | 1,314.82 | 0.45 | 99.42 | |
| Novorapid® (insulin aspart) Injection 300U/3 ml | A10AB05 | 875.81 | 0.30 | 99.72 | |
| Pioglitasone tab 15 mg | A10BG03 | 749.46 | 0.26 | 99.98 | |
| Levemir® (insulin detemir) injection 300U/3 ml | A10AE05 | 58 | 0.02 | 100.00 | |

results show that there are approximately 159 DDD per 1,000 patients, meaning that for every 1,000 patients there are 159 people who receive glimepiride with a strength of 2 mg. In general, the treatment prescribed based on the results of research at BRP pharmacies in the district of Demak are sulfonylureas, biguanides, alpha glucosidase inhibitors, thiazolidinediones, and insulin. The results of this study are in line with the research conducted by Ramadhan, *et al*.[23]. Saputri, *et al*[24]. showed in their result that the highest use of oral antidiabetics was the sulfonylurea (glimepiride) group. Based on the recommendation of the Indonesian Endocrinology Association (PERKENI) therapy in 20212[25], treatment management for type 2 diabetes mellitus patients can be given the first treatment option that is metformin, but with reasons and considerations of the patient's condition if intolerance, allergies and unwanted side effects occur, they can choose either one other class of drugs such as biguanides, GLP-1 agonists, DPP-IV inhibitors, alpha glucosidase inhibitors, thiazolindindiones, sulfonylureas, and glinides. There are 4 (four) groups of sulfonylureas commonly used in BRP pharmacies in the district of Demak, namely glimepiride, gliclazide, glibenclamide, but of the three sulfonyurea groups the most widely used is glimepiride. Based on the literature, glimepiride has a much smaller potential risk of hypoglycemia than glibenclamide, this is

due to the ability of glimepiride to suppress insulin secretion at mealtimes and during activity conditions[26].

The second highest consumption of antidiabetics in BRP pharmacies in Demak district is metformin (biguanid group) of 90,619.33 DDD/1,000 patient days. According to several guidelines, metformin therapy can be used in patients with type 2 diabetes mellitus and is the main choice, especially for obese patients, under 60 years of age, and pregnant women. However, if the patient is intolerant to metformin, other class of drugs can be given[2714]. It is known that metformin has the advantage of not causing hypoglycemia and lower drug costs than sulfonylureas[25]. Research conducted by Maulidya & Oktatianti[28]. Putri[29]. Suhailis, *et al*[30]. shows that the most common use of single therapy is metformin. This is different from the results of research conducted that the most use is dominated by glimepiride followed by the second most use is metformin.

Table III shows that the drugs that are included in the 90% DU segment are the sulfonylurea group (glimepiride) followed by the biguanide group (metformin). The difference in the results of the study was due to the fact that glimepiride had many types of dosages, namely 1 mg, 2 mg, 3 mg and 4 mg, while metformin 500 mg and 850 mg were based on prescription, more patients were given glimepiride between the 4 doses of the drug, compared to the 4 doses. metformin with a choice of 2 doses of drug preparations so that the consumption of the drug tends to be more on the use of glimepiride. However, the treatment given was in accordance with therapeutic guidelines because basically the selection of type 2 diabetes mellitus drug classes was at the discretion of the prescriber by looking at the patient's condition including looking at the individualization of the patient, the effectiveness of the drug by considering financing factors, drug side effects, the effects on the patients' weight, the patients' choice, and drug availability. One of the main keys in the treatment of type 2 diabetes mellitus is controlling the increase in blood sugar in preventing complications, related to glycemic control apart from a healthy lifestyle that is the selection of antidiabetics, each of which has a different mechanism of action, advantages, and disadvantages.

The evaluation of drugs using the ATC/DDD and 90% DU methods can be useful in the drug planning process because this data shows the results of the use or consumption pattern of antidiabetic drugs in BRP patients for 1 (one) year which allows usage that is not much different in the following year so that the final target from this evaluation is to assess the efficiency of the use of antidiabetic drugs in BRP patients in pharmacies in Demak district in ensuring the availability of BRP drugs and avoiding the occurrence of BRP drug vacancies. It is hoped that by knowing the consumption patterns of antidiabetic drugs that are included in the 90% DU segment, more attention is paid to their availability.

**Antidiabetic Drug Cost**

Drug costs for BRP patients are billed through claims to BPJS Kesehatan. The amount of drug costs at BRP pharmacies is the same, namely according to the prices in the BPJS Kesehatan e-catalog and added pharmacy margins and pharmaceutical service factors[31].

Table IV shows that the drugs prescribed are generic preparations and are listed in the Fornas so that the payment for treatment is still affordable. This is in accordance with the Regulation of the Minister of Health of the Republic of Indonesia Number 59 of 2014[32] which states that prescribing for BRP drugs must be in accordance with Fornas so that the quality of the drugs can be guaranteed and the prices are still affordable. Table V shows the total cost of drugs per DDD and the types of drugs that fall into the 90% DU segment, which is much smaller than the 10% DU segment. This shows that BRP pharmacies in Demak district have more use of the drugs and the cost of drugs in the DU segment is 10%.

**Table IV. Analysis of antidiabetic costs per DDD in 6 (six) BRP pharmacies in Demak district**

| Prescribed drug name & Strength | DDD/1,000 outpatient days | Total cost of drug use (Rp) | Cost of each antidiabetic/DDD (Rp) |
|---|---|---|---|
| Glimepiride tab 1 mg | 1,056.82 | 809,100.00 | 765.60 |
| Glimepiride tab 2 mg | 17,754.55 | 8,085,420.00 | 455.40 |
| Glimepiride tab 3 mg | 5,072.73 | 1,822,800.00 | 359.33 |
| Glimepiride tab 4 mg | 2,563.64 | 761,400.00 | 297.00 |
| Metformin tab 500 mg | 1.369432 | 12,292,020.00 | 897.40 |
| Metformin tab 850 mg | 1,419.89 | 1,176,000.00 | 828.24 |
| Gliklazid tab 80 mg | 3,181.82 | 1,233,750.00 | 387.75 |
| Akarbose tab 50 mg | 470.75 | 3,726,000.00 | 7,920.00 |
| Akarbose tab 100 mg | 1,390.90 | 7,628,580.00 | 5,484.60 |
| Glimepiride tab 5 mg | 974.03 | 357,000.00 | 366.52 |
| Novomix® (NPH) injection 300U/3 ml | 286.36 | 9,408,000.00 | 32,853.33 |
| Lantus® (insulin glargine) injection 300U/3 ml | 238.64 | 6,230,000.00 | 26,106.67 |
| Glikuidon tab 30 mg | 225 | 990,000.00 | 4,400.00 |
| Novorapid® (insulin aspart) Injection 300U/3 ml | 146.59 | 3,848,500.00 | 26,253.33 |
| Pioglitasone tab 15 mg | 129.55 | 2,280,000.00 | 17,600.00 |
| Levemir® (insulin detemir) injection 300U/3 ml | 10.23 | 267,000.00 | 26,106.67 |
| Total | | 60,915,570.00 | |
| Average | | | 9,442.63 |

The Technical Guidelines for the Evaluation of Drug Use in Health Facilities in 2017[9] explains that drugs that are included in the 10% DU segment are drugs used in small quantities so that their procurement is not a priority except for emergency category drugs. The reason for the low drug costs in the 90% DU segment is because the researchers focused their research on type 2 diabetes mellitus patients who are known to use more oral antidiabetics than insulin, the total cost is based on the price of each drug, and the amount of drug use so that insulin use is included in the 10% DU segment, and the amount of the use of insulin is less than oral antidiabetics yet the cost is quite large. Therefore the results indicates that drug costs in the DU segment were 10% higher. The drugs that are included in the DU 90% means that as much as 90% of the total use of drugs is compared to the number of drug items that enter the remaining 10%. If the number of items and the cost of drugs used in DU 10% is much more than 90%, it is necessary to pay attention to the efficiency of drug use. These results are monthly usage data for a period of one year, therefore they can be used as a reference in preparing a drug demand plan or *Rencana Kebutuhan Obat* (RKO), and can identify excessive or unused drug consumption and prevent BRP drug vacancies so that the procurement of drugs that are included in the DU segment 10% can be minimized. Drugs listed in the

**Table V. Analysis of the cost of antidiabetic drugs per DDD DU 90% and DU 10% in 6 (six) PRB pharmacies in Demak district**

| Name Pharmacy | Drug costs for DU segment 90% (Rp) | Drug costs for DU segment 10% (Rp) | Drug price/DDD DU 90% (Rp) | Drug price/DDD DU 10% (Rp) | Total price of medicine/DDD (Rp) |
|---|---|---|---|---|---|
| A | 3,974,460.00 | 2,439,820.00 | 15.86 | 58.50 | 74.36 |
| B | 4,465,740.00 | 9,979,710.00 | 17.82 | 239.29 | 257.11 |
| C | 3,593,850.00 | 6,804,630.00 | 14.34 | 163.16 | 177.50 |
| D | 4,604,310.00 | 11,127,240.00 | 18.38 | 266.81 | 285.18 |
| E | 1,027,230.00 | 5,371,250.00 | 13.04 | 75.10 | 88.14 |
| F | 5,041,950.00 | 1,477,380.00 | 20.12 | 35.42 | 55.55 |
| Total | 22,707,540.00 | 37,200,030.00 | 99.57 | 838.28 | 937.35 |

**Table VI. Compatibility of drugs with Fornas in 6 (six) DRR pharmacies in Demak district**

| Pharmacy name | Percentage of compatibility (%) |
|---|---|
| A | 86 |
| B | 91 |
| C | 100 |
| D | 100 |
| E | 88 |
| F | 100 |

Description: The drug that is not suitable in Pharmacies A, B, and E is pioglitazone.

Fornas/*guideline* list should be included in the 90% DU so that drug procurement also refers to the 90% DU. In the JKN era, drug management must implement quality control and cost control. The government set Fornas as quality control and electronic catalog of drugs as price control[33]. The results showed that the drug costs in each of the pharmacies studied had the same drug prices because the they had the same management, hence the cooperation system related to the amount of drug costs had the same mechanism. The difference in the amount of BRP drug costs is based on the duration of drug administration, the margin of each pharmacy, and the factors of pharmaceutical services[34].

One of the purposes of calculating drug costs per DDD is to see drugs with the same indications, clinical conditions, and effectiveness, but have the lowest cost or cost minimization analysis (CMA) so that the cost analysis can be compared with the WHO dose of DDD. The benefits obtained from the analysis of drug cost per DDD can be used to measure the cost effectiveness of various other diabetes mellitus drug options by reviewing the lowest drug cost per DDD. Table V shows that, of the 6 BRP pharmacies studied, the average cost of drugs per DDD included in the DU 90% is much lower, so this result can provide an illustration that there is more drug financing in the DU 10%. The Technical Instructions for Evaluation of Drug Use[9]. mentions that 10% of drugs that enter the DU means that they are used in small volumes so that they are not a priority for procurement unless the drug is an emergency drug, so drug financing planning should be effective and efficient.

### Compatibility of antidiabetic drugs with Fornas

*Health care facilities registered in BPJS Kesehatan must be guided by Fornas hence it is expected to improve the quality of pharmaceutical services, use efficient drugs, control drug costs, and ensure drug availability so as to support the*

*successful implementation of JKN*[3231]. If the prescribing suitability value and the standards used is higher, the treatment given is more rational[8].

Table VI shows that the suitability of the use of antidiabetic drugs with Fornas at Pharmacies A, ,B and E has not reached 100%. There is 1 (one) drug that is not suitable, namely pioglitazone of the thiazolidinedione group. Based on the findings in the study, if pioglitazone is prescribed, the cost of the drug will be outside of the responsibility of BPJS Kesehatan, because the drug is not included in the Fornas BRP, so the patient has to incur additional costs for the prescribed drug and, of course, burdening the patient who has previously paid monthly contributions to BPJS Kesehatan. However, in contrast to the results shown at Pharmacies C, D, and F, the suitability reaches 100%. This result is different from the previous research conducted by Khusna & Septiana[35]. where that the results of the suitability of treatment for type 2 diabetes mellitus against Fornas had reached 100%.

Factors that influence the writing of prescriptions not referring to the Fornas are internal factors such as the need for drug therapy that has not been included in the formulary due to lack of socialization to all doctors or insufficient information related to drugs included in the Fornas. Meanwhile, external factors are related to other parties in order to prescribe certain drugs[36]. Other causes include the need for the patient's clinical condition so that prescribers have difficulty in choosing drugs that must be in accordance with Fornas, but research shows that prescribing treatment for BRP patients with type 2 diabetes mellitus is a generic drug this is supported by Fornas, where JKN participants are required to get generic drugs that of course adjusted to the patient's medical indication[37]. The description of the results of the research conducted shows that the prescriber has been effective and efficient in implementing Fornas. The purpose of looking at the percentage of suitability of antidiabetic drugs is to look at the drugs available in the Fornas BRP. This study has not led to assessing the rationality of drug use in depth. It is hoped that the use of drugs that are in accordance with Fornas can provide effective, efficient, and cost-effective prescribing which is the purpose of the JKN program for BRP patients.

## CONCLUSION

Based on the evaluation analysis of drug use in 6 (six) BRP pharmacies in Demak district, the results showed that there were 2 (two) major uses of antidiabetic drugs that were included in the 90% DU segment, namely glimepiride and metformin. The total cost of antidiabetic drugs is Rp 53,509,090.00, and the total cost of drugs included in the 90% DU segment is Rp 22,707,540,00. The average cost of antidiabetic drugs per DDD is Rp 1,368.01. The results of the percentage of conformity have not reached 100% and the drug that is not included in the list of Fornas BRP in 2020 is pioglitazone.

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