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The Influence of Using Orthoses Prostheses for People With Disabilities to The Quality of Life on Special Health Coverage in Bapel Jamkesos Region of Yogyakarta

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Abstract

Background: Quality of life is an assessment of individual welfare that can be felt in daily life includes many aspects such as emotions, social, and physical in the lives of individuals. The quality of life of people with disabilities needs to be assessed and evaluated to see the extent of changes that occur after receiving comprehensive medical rehabilitation services. **Materials and Methods:** Quality of life is an assessment of individual welfare that can be felt in daily life includes many aspects such as emotions, social, and physical in the lives of individuals. The quality of life of people with disabilities needs to be assessed and evaluated to see the extent of changes that occur after receiving comprehensive medical rehabilitation services. **Results:** A complete description of the 8 aspects of quality of life is 1) Limitations of physical activity due to existing health problems, the results are 65.34% unlimited, 2) Limitations of social activities due to physical and emotional problems, the results are 66.68% unlimited, 3) Limitations of daily activities due to physical problems, the results are 81.65% unlimited, 4) whole body pain, the result is 58.3% do not feel the pain means, 5) mental health in general, the results are 39.62% have a life spirit 6) Limitations of daily activities because of emotional problems, the results are 53.3% unlimited, 7) vitality of life, the results are 70.85% feeling good and 8) health views in general, the results are 51.65% feeling very good. **Conclusion:** The orthoses prostheses that used by patients can provide benefits and improve their quality of life.

Keywords: disability, jamkesos, orthose prostheses, quality of live, special health coverage

1. Introduction

Proper storage of medicines is essential to ensure their safety, quality and efficacy. Certain drugs have storage criteria to maintain drug stability. These storage criteria include storage temperature, storage room humidity, and storage conditions (1).

Some information on how to store medicines properly and correctly includes sorting medicine storage containers by type, storing medicines in original packaging that is labelled and tightly closed, storing at room temperature, or as stated on the packaging label, keeping out of the reach of children, and routinely selecting medicines that have expired or are damaged (2).

Before a drug is used, it must be known whether the drug is still suitable for consumption. The parameters of a drug that is still suitable are *expiry date* (ED) and *beyond use date* (BUD). *Expiry date* is the time limit for using the medicine before the packaging is opened, which is published by the pharmaceutical manufacturer. The ED is usually listed on the medicine packaging. The *beyond use date* is the time limit for using the medicine after the medicine has been compounded and prepared or after the primary packaging of the medicine has been opened or tampered with. BUD information is generally not included on the medicine packaging (3).

Despite the differences between ED and BUD, both are intended to minimise patient risks associated with changes that may occur to the drug during storage. These changes are different for each drug and are influenced by a wide variety of factors ranging from the excipients added during compounding to the storage container and temperature (3).

Knowledge about medicine storage is a basic understanding that must be possessed by the community. Based on the results of the Basic Health Research (Riskesdas) in 2013, 35.2% of Indonesians stored medicine at home. The percentage of types of drugs stored included 35.7% hard drugs, 82% over-the-counter drugs, 27.8% antibiotics, 15.7% traditional drugs, and 6.4% unidentified drugs. Data on the status of drugs stored in households showed that the percentage of drugs being used was 32.1%, for supplies 42.2%, and leftover drugs 47% (4).

Public knowledge about drug storage is still relatively minimal. Based on the results of Nanda's research (2019), the level of public knowledge about how to store medicines in West Semper Village, North Jakarta in July 2019 was still low (54.12%) (5) . In Savira et al's research (2020) on drug storage in the family, as many as 94.3% of respondents stored drugs at home and 13.6% of them still stored drugs in expired conditions (6). General information about drug storage is actually listed on drug packaging, but often people ignore and do not understand properly.

Providing public education by health workers about drug storage is one of the important responsibilities of pharmacists to prevent a decrease in drug efficacy. Pharmacy students from Universitas Gadjah Mada as prospective pharmacists must be ensured to know information about how to store drugs before going into the field. This study was conducted with the aim of measuring the level of knowledge of students about drug storage, ED, and BUD.

2. Materials and Methods

Research Design

This research design is quantitative using *cross sectional* study. This research was conducted with instruments in the form of questionnaires using surveys and seeking information collected in the form of primary data related to the level of knowledge of drug storage and drug expiration of Pharmacy Students from Universitas Gadjah Mada. This research was conducted at October 2023 to November 2023 *online* for students of Faculty of Pharmacy, Universitas Gadjah Mada.

Data Collection

The method of data collection was by distributing questionnaires *online* through *Google Form,* the link was then disseminated through *social media* with a brief introduction to the research and a consent form. Only students who agreed to fill out the form and were eligible were allowed to complete the questionnaire.

The population in this study were Pharmacy undergraduate students from Universitas Gadjah Mada in semesters 1, 3, 5, and 7 who performed drug storage activities. The Ethics Commission of

the Faculty of Medicine, Universitas Gadjah Mada (KE/FK/1678/EC/2023) approved this research. The sampling method used was *convenience sampling*. Determination of the sample size was carried out using the following sample formula:

$$n = \frac{N}{1 + Ne^2}$$

The sample size uses the *Slovin* formula with an error tolerance limit (e) of 10%. So that the sample size is calculated as 90.5 and rounded up to 91 respondents as the final sample size.

Data were collected using a questionnaire and the instrument was compiled based on previously published research articles. Then the instrument was carried out reliability testing on 30 respondents outside the research respondents, based on the results of the reliability test showed that the questionnaire was reliable as evidenced by the *Cronbach Alpha* value of 0.657 so that it met the requirements (>0.6). Then the validity of the instrument is carried out with *content validity* evaluated by *expert judgement* discussion with the supervisor, the questionnaire consists of four parts as follows:

The first section consists of an introduction that contains the respondent's willingness to participate in the study, the second section is the respondent's identity containing name, address, gender, age, semester, pocket money, parent's occupation, and current living conditions. Then in the third section is a statement about drug storage and the fourth section is a statement about drug expiration.

Data Analysis

Data was analysed using SPSS *software*, firstly the data was transferred into IBM SPSS. Then descriptive statistics such as mean, median, min, max, and standard deviation were used to reveal various parameters. Normality test using *Kolmogorov-Smirnov*, relationship testing for both variables using *Chi-square test,* decision making in *Chi-square* test using *cross tabulation* in SPSS programme with significance level p<0.05.

3. Results

The characteristics of the respondents are shown in Table 1. From the total of 132 respondents, the semester level in this study was mostly semester 1 with a percentage of 32%, the gender of most respondents was female as much as 83% and the age range in the 17-19 years group was 51%. The amount of pocket money for respondents in this study was mostly Rp 1,001,000 - Rp 2,000,000 as much as 35%. The parent's occupation is dominated by the non-healthcare workers sector by 83% and the respondents' living conditions are mostly in boarding houses/dormitories with a percentage of 67%.

Based on the test results in Table 2 regarding the level of knowledge of drug storage and drug expiration among Pharmacy students from Universitas Gadjah Mada, out of 132 respondents, 116 (87.88%) respondents had a good level of knowledge of drug storage and 16 (12.12%) had a poor level of knowledge. As for the level of knowledge of drug expiration, 20 (15.15%) respondents had a good level of knowledge and 112 (85.85%) respondents had a poor level of knowledge.

Table 1. Sociodemographic Characteristics of Respondents

Sociodemographics & Respondent Characteristics	Total (N) = 132	Percentage (%)
Semester		
1	42	32
3	24	18
5	27	20
7	39	30
Gender		
Male	22	17
Female	110	83
Age		
17-19 years old	67	51
20-21 years old	59	45
22-23 years old	6	4
Pocket Money		
< IDR 500,000	28	21
IDR 501,000 - IDR 1,000,000	42	32
IDR 1,001,000 - IDR 2,000,000	46	35
IDR 2,001,000 - IDR 3,000,000	11	8
IDR 3,001,000 - IDR 5,000,000	5	4
Parent's Occupation		
Healthcare workers	23	17
Non-Healthcare workers	109	83
Current Living Conditions		
Living with parents	43	33
Living at a boarding house/dormitory	89	67

Table 2. Categories of Knowledge Level of Drug Storage and Drug Expiration

No.	Domain	Category	Number (N)	Percentage (%)
1.	Medicine Storage Knowledge Level	Good	116	87,88
		Less	16	12,12
2.	Medicine Expiration Knowledge Level	Good	20	15,15
		Less	112	85,85

Table 3 presents the distribution of respondents' answers for each item of the drug storage statement. The highest knowledge of respondents was in statements number one and three, namely "Medication is stored at room temperature and protected from direct sunlight or as stated on the packaging" and "Solid preparations are stored in a medicine box and kept out of reach of children" with 99.24% (n = 131) of respondents answering correctly. Meanwhile, the lowest knowledge of respondents was in statement number ten, namely "After opening, insulin can be stored at room temperature (25°C-30 °C)" with 57.58% (n = 76) of respondents answering incorrectly.

Based on Table 3, the respondents' knowledge regarding drug expiry is presented. The highest knowledge was in statement number two, namely "*Expiry Date* (ED) is the date when the drug should no longer be used when the packaging or seal has not been opened" with 84.09% (n=111) of respondents answering correctly. Furthermore, the lowest knowledge regarding drug expiration was in statement number eight, namely "The use of concoction

ointment can be used for 3 months" with 68.18%
(n=90) of respondents answering incorrectly.

Table 3. Distribution of Respondents' Answers Based on Statement Items Drug Storage and Drug Expiration

No.	Questionnaire Statement	N (%)	
		Exactly	Inappropriate
Medicine Storage Knowledge			
1.	Keep the medicine at room temperature and out of direct sunlight or as stated on the packaging.	131 (99,24%)	1 (0,76%)
2.	The drug will not break down/oxidise at high temperatures	123 (93,18%)	9 (6,82%)
3.	Tablets and capsules may be stored in hot or humid places.	124 (93,94%)	8 (6,06%)
4.	Solid preparations are stored in the medicine box and kept out of reach of children	131 (99,24%)	1 (0,76%)
5.	Storage of liquid medicines in the freezer should be avoided unless specified on the medicine label or package.	124 (93,94%)	8 (6,06%)
6.	Semisolid preparations such as creams, gels, and ointments should be stored in a tightly closed place to avoid contamination.	128 (96,97%)	4 (3,03%)
7.	Aerosol or spray preparations can be stored at high temperature.	119 (90,15%)	13 (9,85%)
8.	Ovula and suppository preparations are stored in a refrigerator to prevent thawing at room temperature.	108 (81,82%)	24 (18,18%)
9.	Medicines containing flammable substances (acetone, ether, and alcohol) can be stored in a well-ventilated cupboard close to electronics.	117 (88,64%)	15 (11,36%)
10.	Once opened, insulin can be stored at room temperature (25°C-30 °C)	56 (42,42%)	76 (57,58%)
Medicine Expiration Knowledge			
1.	*Beyond Use Date* (BUD) is the date by which the medicine should no longer be used after the packaging or seal has been opened.	110 (83,33%)	22 (16,67%)
2.	*Expiry Date* (ED) is the date when the medicine should no longer be used when the packaging or seal has not been opened.	111 (84,09%)	21 (15,91%)
3.	Physical and chemical changes in all drug preparations indicate the drug has expired	96 (72,73%)	36 (27,27%)
4.	Expired medicine can still be used if the physical condition of the medicine is still appropriate.	99 (75%)	33 (25%)
5.	Drugs that are no longer effective when used are one of the characteristics of expired drugs	103 (78,03)	29 (21,97)
6.	Medicine with bulging packaging is expired medicine	63 (47,73)	69 (52,27%)
7.	Unsealed syrup can be consumed for 6 months	91 (68,94%)	41 (31,06%)
8.	The ointment can be used for 3 months.	42 (31,82%)	90 (68,18%)
9.	Eye drops that have been opened can be used for 28 days.	80 (60,61%)	52 (39,39%)
10.	Tablet medicine has a BUD of 6 months	73 (55,30%)	59 (44,70%)

Based on the *Chi-square* test shown in Table IV, there is no statistically significant relationship between gender and the level of knowledge of drug storage and drug expiration (p>0.05). In this study, it was found that there was a significant relationship between age and the level of knowledge of drug storage (p<0.05), but there was no significant relationship between age and the level of knowledge of drug expiration (p>0.05). The statistical test results showed that there was a significant relationship between semester and the level of knowledge of medicine storage.

In the sociodemographic factor of pocket money based on the results of statistical tests in Table 4, it can be concluded that there is no statistically significant relationship between pocket money and the level of knowledge of drug storage and drug expiration (p>0.05). The results showed that there was a significant relationship between the current living situation and the level of knowledge of drug storage (p<0.05).

Table 4. Sociodemographic Associations with Knowledge Level of Drug Storage and Drug Expiration Time

No.	Sociodemographic Characteristics	Medicine Storage Knowledge Level	Medicine Expiration Time Knowledge Level
		P-value	
	Gender		
1	Male	0,307	1,000
	Female		
	Age		
2	< 20 years	0,639	0,012*
	≥ 20 years		
	Semester		
3	Early	0,791	0,015*
	Medium-end		
	Pocket Money		
4	Low-medium	0,897	0,263
	High		
	Parent's Occupation		
5	Healthcare workers	0,155	0,752
	Non-Healthcare workers		
	Current Living Conditions		
6	Living with parents	0,904	0,019*
	Living at a boarding house/dormitory		

*Significant at p<0.05

4. Discussion

This study aims to measure the level of knowledge of Pharmacy students at Gadjah Mada University regarding drug storage and drug expiration. Respondents in this study were dominated by first semester students and female respondents. Moreover, this study presents a low level of student pocket money compare with the average in their area. In Yogyakarta, the average student pocket money was IDR 2,240,000 per month in 2017 (7).

In the results of research conducted by Labu *et al* (2013) on the knowledge and awareness of students on the practice of disposing of unused drugs, it shows that the majority of respondents are in their first year of academic (8). In a study conducted by Lee et al (2017), stated that students who have families who have status as

health workers have a higher level of knowledge about medicine when compared to students who do not have families of health workers (9).

As for the level of knowledge of drug expiration, more than a half of respondents had a poor level of knowledge (85.85%). From these results it can be seen that the level of knowledge of drug storage is mostly in the good category and drug expiration in the poor category. The results of drug storage research are in line with research conducted by Puspitasari et al (2022) which found that the level of knowledge and drug storage in the community was in the good category with a percentage of 53% and 83% respectively (10). In the results of research on drug expiration in line with research conducted by Garus (2018) on *Beyond Use Date of* drugs, it was found that only 33% of people had knowledge related to Beyond Use Date of compounded drugs (11). So, it can be said that the level of public knowledge regarding the BUD of medicinal preparations is still low. In daily practice, it is not uncommon to misunderstand the BUD with the *expiration date* (*ED*). Often the ED of the drug after the packaging is opened (BUD) is considered to remain the same as that stated on the packaging, even though the ED of the drug has changed.

The highest knowledge of respondents was in statements of "Medication is stored at room temperature and protected from direct sunlight or as stated on the packaging" and "Solid preparations are stored in a medicine box and kept out of reach of children" with 99.24% (n = 131). From these results, it can be seen that students already understand drug storage in general. According to the Ministry of Health (2022), medicines should be stored at room temperature and out of direct sunlight or as stated on the packaging(12). Some drugs have hygroscopic properties that require special attention in storage. For example, there are drugs that easily become mushy when exposed to outside air, so they must be stored in the original and sealed packaging.

The lowest knowledge of respondents was in statement of "After opening, insulin can be stored at room temperature (25°C-30 °C)" with 57.58% (n = 76) of respondents answering incorrectly. From these results, it can be seen that students' understanding of the storage of special preparations such as insulin is still lacking. Insulin that is still closed (unopened) and will not be used must be stored at 2°C - 8°C in the refrigerator (do not freeze). When insulin is in use or in reserve, it does not need to be stored in the refrigerator. Insulin used earlier can last approximately 4 weeks at room temperature below 30°C after being taken from the refrigerator (13).

The respondents' knowledge regarding drug expiry is presented in table 3. The highest knowledge was in statement number two, namely "*Expiry Date* (ED) is the date when the drug should no longer be used when the packaging or seal has not been opened". From this result, it can be seen that most students already know the definition of ED. According to USP (2020), *Expiry Date* (ED) is the date when the drug should no longer be used when the packaging or seal has not been opened.

The lowest knowledge regarding drug expiration was in statement number eight, namely "The use of concoction ointment can be used for 3 months" with 68.18% of respondents answering incorrectly. From these results, it can be seen that students' knowledge about BUD, especially for concoction preparations, is still lacking. According to USP (2020), in Semisolid preparations (Ointment, Cream, Gel, Paste) the maximum beyond use date for compounded semisolid preparations is 35 days (3).

Meanwhile, the lowest knowledge of respondents was in statement of "After opening, insulin can be stored at room temperature (25°C-30 °C)" with 57.58% of respondents answering incorrectly. From these results, it can be seen that students' understanding of the storage of special preparations such as insulin is still lacking. Insulin that is still closed (unopened) and will not be used must be stored at 2°C - 8°C in the refrigerator (do not freeze). When insulin is in use or in reserve, it does not need to be stored in the refrigerator. Insulin used earlier can last approximately 4 weeks at room temperature below 30°C after being taken from the refrigerator (13).

Based on the *Chi-square* test results, there is no statistically significant relationship between gender and the level of knowledge of drug storage and drug expiration. The difference in

gender is not one of the factors that will make a difference in the level of knowledge (14). In this study, it was found that there was a significant relationship between age and the level of knowledge of drug storage, but there was no significant relationship between age and the level of knowledge of drug expiration. The varied results in this study can be caused by the different health conditions of each person, which affects the type of medicine stored. In addition, with today's technological advances, students can easily access information related to medicine easily and does not depend on age. The next sociodemographic factor is semester. The statistical test results showed that there was a significant relationship between semester and the level of knowledge of medicine storage, but there was no significant relationship between semester and the level of knowledge of medicine expiration. The results of the statistical test of the level of knowledge of drug expiration are in accordance with the theory of Notoatmodjo (2014) which states that the factor that has the greatest influence on knowledge is education, because people with higher education can provide a more rational response to the information received (15).

In the sociodemographic factor of pocket money based on the results of statistical tests, it can be concluded that there is no statistically significant relationship between pocket money and the level of knowledge of drug storage and drug expiration. Knowledge about medicine storage and expiry may be influenced by the extent to which a person is interested or needs this knowledge in daily life, regardless of how much pocket money is earned. In addition, people in Indonesia are covered by the National Health Insurance (Jaminan Kesehatan Nasional or JKN), a programme that ensures that people have easy and affordable access to health services (16).

There is no significant relationship between parent's occupation and the level of knowledge of drug storage and drug expiration. This result is in line with research conducted by Ankita and Ipsa (2021) which concluded that no statistically significant differences were found between parent's occupation and standard precautionary knowledge in university students (17). However, as family values are highly upheld in Indonesian culture, drug education programmes should consider working with parents to be more effective. Then the next sociodemographic characteristic is current state of residence. The results showed that there was a significant relationship between the current living situation and the level of knowledge of drug storage, but there was no significant relationship between the current living situation and the level of knowledge of drug expiration. Students who live with their parents may have greater influence from their parents in terms of education and learning. Parents who have good knowledge about health may be able to transfer that knowledge to their children.

This study has several limitations, namely measurements were only made based on the results of questionnaires distributed by researchers, limited research time and sample size, and the research instrument is a closed-ended statement that does not allow respondents to express their opinions.

5. Conclusion

Most respondents had a good level of knowledge about medicine storage and less about medicine expiration. There was no relationship between gender, age, semester, pocket money, parents' occupation, and current living situation ($p>0.05$) with drug storage knowledge. Meanwhile, there was a relationship between age, semester, and current living situation ($p<0.05$) with drug expiration knowledge. It is necessary to increase the literacy of pharmacy students about drug expiration, especially BUD on various preparations to ensure drug quality and safety.

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