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The Effect of Education on Writing Integrated Patient Progress Notes (IPPNs) at Several Government Hospitals in Bukittinggi, Indonesia

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Abstract

Background: *The writing of Integrated Patient Progress Notes (IPPNs) by pharmacists generally does not fulfil the correct writing standards.* ***Objective****: This study aimed to analyze the effect of education on the level of knowledge and writing profile of IPPN.* ***Methods****: A prospective analytic method research design was used with data collection techniques through questionnaires and total sampling for IPPN data. The researcher developed a valid and reliable questionnaire to measure pharmacists' level of knowledge. Education was conducted through "Focus Group Discussion" with PowerPoint slides of SOAP method writing material and SOAP framework leaflets. Quantitative analysis of IPPN data was performed using the Wilcoxon test on SPSS.* ***Results****: The results showed that the highest percentage of pharmacists' knowledge level before education was A.M Hospital (87%) and after education was B Hospital (95%). The profile of IPPN writing by pharmacists before being given education showed the highest percentage of IPPN writing suitability was at A.M Hospital (21.6%), and the completeness of IPPN writing was at M.H Hospital (99%). After education, the highest percentage of IPPNs writing suitability was in B Hospital (64.3%), and the completeness of IPPNs writing was in M.H Hospital (97.9%). Education has an effect on pharmacists' knowledge level (p-value 0.029) and the appropriateness profile of IPPN writing (p-value 0.013). However, education did not affect the completeness of writing Integrated Patient Progress Notes (IPPNs) (p-value 0.285).* ***Conclusion****: Education succeeded in improving pharmacists' knowledge of writing CPPT correctly.*

Keywords*: educational impact, integrated patient progress notes (IPPNs), IPPNs writing profil, SOAP notes*

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INTRODUCTION

Using the SOAP (Subjective, Objective, Assessment, Plan) technique, a healthcare practitioner writes an Integrated Patient Progress Note (IPPN) detailing how the patient's condition has developed and is integrated into the patient's medical record in a standardized format (Ministry of Health, 2022; Vijayakumar TM, 2016). An integrated medical record system is a means for professionals to make corrective and clinical decisions in analyzing and maintaining patient status (Lestari *et al*., 2020). The primary function of pharmacists in this activity is as an effort and intervention to solve the problem of irrational drug use. Efforts and interventions can be in the form of educational strategies, managerial strategies, and regulatory strategies (Kemenkes, 2011). Pharmaceutical care does not take over the work of doctors or other professions but complements the needs of the healthcare system that arise due to irrational therapy (Wydiati, 2016). In addition, clinical pharmacy practice contains information that reflects treatment actions between professionals and lay people. (Adejare *et al*., 2021).

Completion of IPPN using the SOAP method requires a framework that becomes a reference for pharmacists. Not all information obtained must be filled in the IPPN, depending on the type of visit and whether it is related to drug problems (Oregon State University, 2017). Correct documentation follows specific rules, including complete and readable documents, and the form and content of documents can be developed as needed. In the past, pharmacists did not have a common writing culture for evaluation and documentation of patient pharmacotherapy, which applies to all types of pharmaceutical practice (Ministry of Health, 2019). Further studies are needed to evaluate documentation by pharmacists in healthcare settings (Adam *et al.,* 2019). The daily involvement of critical care pharmacists in patient care most often results in the optimization of pharmacotherapy and avoidance of medication errors (Sledge *et al*., 2016). It was coupled with recent regulations that require documentation of patient clinical information to be organized electronically (Ministry of Health, 2022).

An important rule when creating SOAP is that it must be continuous and establish a connection between subjective and objective data. The data written should reflect what will be analyzed in the review. Plans are created sequentially according to the results of the evaluation (if there are multiple DRPs). Writing a SOAP must include the date and time of the letter and end with the pharmacist's initials, name, and job title (Ministry of Health, 2019). The publication of PMK No. 24 of 2022 on medical records is an issue under serious consideration, according to which all medical institutions must use electronic medical records in order to coordinate the writing activities of the IPPN. It is mandatory to create one. (Ministry of Health, 2022).

The results of Firza's research in RSUP Dr M. Djamil Padang showed that 32 pharmacist IPPNs were not written correctly (0%), and (78.12%) of pharmacist IPPNs were written completely (Firza, 2020). Likewise, the results of Hudria's research RSUP Dr M. Djamil Padang showed that the accuracy of pharmacIPPNs'IPPNs' writing was incorrect (0%) of 35 IPPNs, and 74.29% were incomplete (Hudria, 2020). The results of Kamil's research showed that health professionals see the importance of using IPPN but can only be implemented with educational and organizational support and that the use of electronic patient records may be more effective than paper records (Kamil *et al.*, 2020). The results indicate that health professionals see the importance of using IPPNs but only if implemented with educational and organizational support and that the use of an electronic patient record may be more effective than a paper record. Prioritize providing instructional and organizational support to facilitate the deployment of IPPNs. (Kamil *et al*., 2020). The results of Endri research showed that the analysis of the completeness of IPPNwriting (0%) and the suitability of IPPN writing (6.25%) of 31 IPPNat pharmacist one and the results of the analysis of the completeness of IPPN writing (0%) and the suitability of IPPN writing (9.67%) of 31 IPPNat pharmacist 2 (Endri *et al*., 2023).

MATERIALS AND METHODS

Research design

This research uses observational and analytical research methods with prospective data collection. Research data was taken from questionnaires and pharmacists' Integrated Patient Progress Notes (IPPN). Respondent data collection techniques for validity and reliability tests and pharmacist knowledge levels using questionnaires. The data collection technique for pharmacist respondents who will be given education uses purposive sampling. IPPNs data collection technique is in the form of total sampling.

Data collection

The data used was a questionnaire on pharmacists' level of knowledge regarding writing Pharmacist SOAPs and data on pharmacists' IPPNs writing at the research hospital. The questionnaire (Table 1) was made

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based on the literature and observations of researchers in several hospitals in Indonesia. The questionnaire to be used was first tested for construct validity and reliability on 30 respondents. Data collection was carried out by distributing questionnaires that had been made in the National HISFARSI group and the National LARSI Surveillance group via Google Form. The questionnaires collected were those filled out by pharmacist respondents who wrote IPPNs using the SOAP method in hospitals outside Bukittinggi, the province of West Sumatra.

Table 1. Research questionnaire

Put a check mark (√) on one of the most correct answers based on what you know

No.	Questionnaire Statement	True	False	hesitations
1.	*Subjective, Objective, Assessment, Plan* (SOAP) is one of the methods used in the Integrated Patient Progress Record (IPPNs) documentation.	√		
2.	In collecting *Subjective (*S) data, the pharmacist does not need to visit the patient's room.		√	
3.	Interviews can be conducted to complete subjective data not found in medical records required for *assessment* related to drug use.	√		
4.	History of disease is not Subjective (S) data.		√	
5.	Objective (O) data is sourced from observations, and measurements made by other health professions.	√		
6.	The doctor's diagnosis is Objective (O) data.	√		
7.	Information from patients related to drug use history is written on *Objective* (O) data.			√
8.	If more than one Drug Related Problem *(DRP) is found*, then the DRP writing should be numbered (with numbers 1, 2, and so on) sequentially in the *Objective* (O) data.			√
9.	The results of diagnostic tests such as culture tests do not need to be written on *Objective* (O) data.			√
10.	In writing SOAP, there must be continuity and relationship between *Subjective* data (S) and *Objective data* (O).	√		
11.	*Subjective* (S) and *Objective* (O) do not need to be written in the Integrated Patient Progress Notes (IPPNs).			√
12.	*Assessment* (A) is the pharmacist's assessment of the problems faced by patients related to drug use.	√		
13.	The doctor's diagnosis is Assessment data (A).			√
14.	*Assessment* (A) describes the indications of each therapy received by the patient.			√
15.	Writing *Drug Related Problem* (DRP) in *Assessment* (A) should not use sentences that justify certain professions.	√		
16.	Assessment of *Subjective (S) and* Objective (*O) data is carried out by referring to pharmacotherapy principles*, Evidence-Based Medicine (*EBM), and* guidelines *to determine the presence or absence of* Drug Related Problems *(DRPs).*	√		
17.	*Plan* (P) is a pharmaceutical service plan according to the *Drug Related Problem* (DRP) found.	√		
18.	*Plan (*P) does not need to be written if *the Drug Related Problem* (DRP) is not found.			√
19.	In recommending drug therapy for each d*rug-related problem* (DRP) found, it should be written in full the drug therapy recommendations along with the dosage and rules of use.	√		
20.	The counseling plan, recommendations and monitoring of drug therapy are written on *the Plan* (P) data.	√		

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Data on 'thepharmacist's level of knowledge was collected using a valid and reliable questionnaire. Data collection was carried out twice, using the same questionnaire for the pretest and posttest. The pretest was conducted at the beginning of the study at the research hospital using a questionnaire sheet, which was filled in by adding a checkmark in the column provided for the statement that was answered 'TRUE' or 'FALSE' or 'HESITATE'. One week after the pretest, the researcher educated respondents about filling out the IPPNs using the SOAP method. One week later, a posttest was conducted using the same questionnaire as the pretest.

The inclusion criteria for the IPPN data taken were those filled in last by the p pharmacist pharmacist on duty during hospitalization. IPPNs data collection was carried out during the first week before providing IPPNs writing education. The data collection method used was by reviewing documents using a checklist instrument. Then, the researchers provided IPPNs writing education using the FGD (Focus Group Discussion) method for one day. The educational media used are printed media in the form of SOAP writing leaflets and electrolyte media in the form of slides. After the FGD (Focus Group Discussion) activity, researchers also gave the SOAP writing framework leaflet to respondents. The SOAP writing framework leaflet is a summary of the SOAP writing leaflet prepared by researchers as a reference for pharmacists to familiarize themselves with changes in the previous IPPNs writing culture. Figure 1 displays the SOAP framework leaflet. One week following the educational session, another week was dedicated to collecting IPPN data.

Ethical clearance

All of the ethical clearance protocols of this study were approved by the Ethics Committee from the Faculty of Medicine, Andalas University. Number: 1056/UN.16.2/KEP-FK/2022.

Processing, analysis and interpretation of data

In this study, two steps were carried out, namely measuring the level of knowledge and analysis of IPPN writing before and after carrying out educational interventions on correct SOAP writing in accordance with the 2019 Ministry of Health regulations with appropriate variables. The first step is measuring the ppharmacist's level of knowledge using a questionnaire as the dependent variable, with the independent variable being the pharmacist who serves as a clinical pharmacist at the research hospital. The indicators used are questionnaires that have been validated and reliable. The assessment parameter is the suitability of the respondent's answer to the answer key that has been prepared. Respondents who answered correctly were given a value of 2, respondents who answered incorrectly were given a value of 1, while respondents who answered in doubtful were given a value of 0.

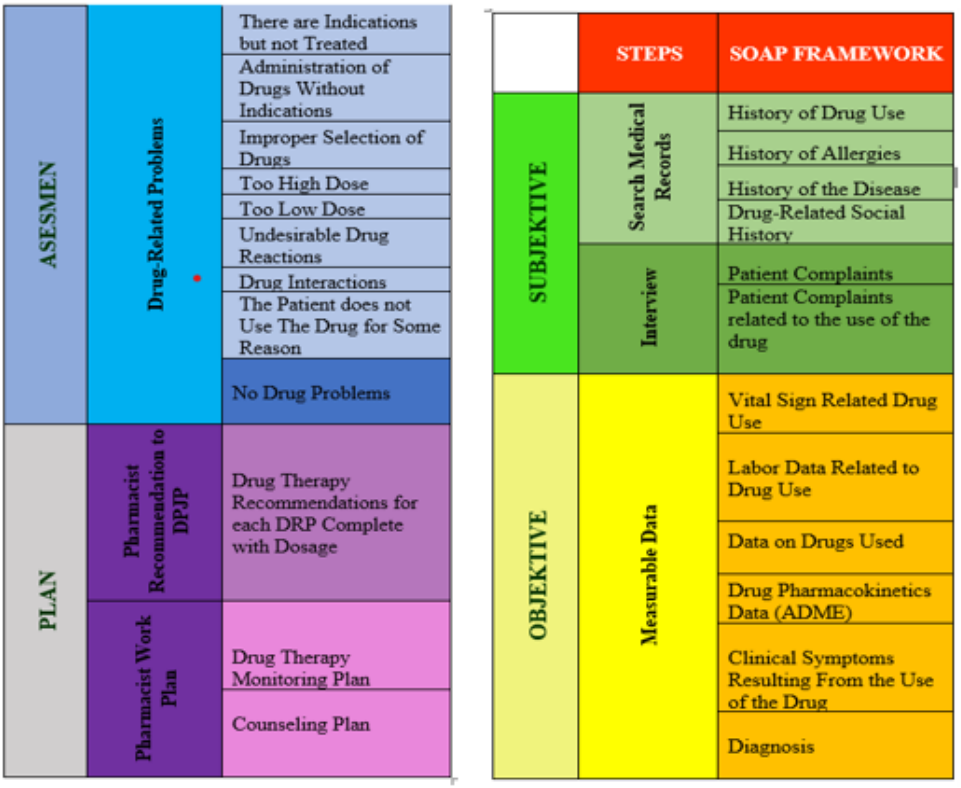

Figure 1. SOAP framework leaflet

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Second step: In the analysis of IPPN writing by pharmacists, the 2019 Ministry of Health regulatory policy is used as the independent variable, with IPPN data written by pharmacists as the dependent variable. The indicators used are the requirements for the completeness of the IPPN and the SOAP framework in accordance with the 2019 Ministry of Health Regulations. The assessment parameter is the suitability of the IPPN written by the pharmacist with the rules of the 2019 Ministry of Health Regulations. Writing a SOAP must include the date and time of the letter and end with the pharmacist's initials, name, and job title (Ministry of Health, 2019). The assessment parameter is the suitability of the IPPN written by the pharmacist with the rules of the 2019 Ministry of Health Regulations. The assessment of the IPPN writing is whether it is complete or incomplete according to the IPPN completeness requirements and whether the evaluation is appropriate/not in accordance with the rules of the SOAP writing framework. If one of the components is incomplete or inappropriate, it is given a score of 0, while those that are appropriate are given a score of 1.

The validity test of the questionnaire used Pearson's product moment with a significance <0.05. Responses from 30 participants on 20 questionnaire statements were scored as follows: 2 for correct answers, 1 for incorrect answers, and 0 for doubtful answers. Then the data was recapitulated and entered into the SPSS system. The questionnaire reliability test used the Spearman-Brown test with a Cronbach alfa value ⩾ 0.6.

The questionnaire responses from the hospital's participants were converted into percentages and then analyzed to compare the results before and after the educational intervention.. Arikunto (2008) claims that "scoring the level of knowledge" with the following formula (Arikunto, 2008).

$$P = \frac{F}{n} \times 100\%$$

P = The percentage value F = Accurate response
n = The total number of inquiries

As stated by Budiman & Riyanto (2013), in categorizing the level of knowledge can be grouped into two groups for the respondents studied, namely: Good category knowledge level if the value is> 75% and Poor category knowledge level if the value is ⩽ 75%" (Budiman & Riyanto, 2013).

Analysis of the authoring of Integrated Patient Progress Notes (IPPNs) using qualitative analysis techniques of data gathered from written document studies in Medical Records. Data from the IPPN was analyzed both before and after pharmacists received training. The Technical Guidelines for Pharmaceutical Service Standards in Hospitals, which were released by the Ministry of Health in 2019, were analyzed in order to determine the outcomes of the IPPN's writing profiles in a number of government hospitals located in Bukittinggi City. Completeness and appropriateness data were converted into percentages and compared between the pre- and post-education periods.

The effect of education on the level of pharmacist knowledge was carried out using quantitative analysis using SPSS software with the Wilcoxon hypothesis test. Data analysis of the pharmacist's knowledge level was obtained by filling out the questionnaire twice with the same questionnaire before (pretest) and after education (posttest). The questionnaire that pharmacist respondents filled in was presented and then entered into SPPS software to find the p-value.

The effect of education on the profile of IPPNs writing was carried out using quantitative analysis with software using the Wilcoxon hypothesis test. Data from the analysis of IPPNs writing on suitability before and after education and data on the completeness of IPPNs writing before and after education were processed using SPSS with the Wilcoxon hypothesis test to get the p-value. If the significance value (p-value) >0.05, then Ho is accepted, and if the significance value (p-value) <0.05, then Ho is rejected.

Conclusion drawing

The review of the suitability of writing IPPNs concludes that if IPPNs are written using the SOAP technique, they should refer to the 2019 Ministry of Health publication, Technical Guidelines for Pharmaceutical Service Standards in Hospitals. The IPPNs are classified as "not appropriate" if they are not written according to the writing guidelines. Additionally, the IPPNs' writing is deemed unsuitable if there are one or more writing inconsistencies in the data from the subjective, objective, assessment, or plan. An example of a mismatch in question is the placement of objective data written on subjective data such as diagnoses. Another example is a patient's complaint of pain in the subjective data but in the objective data, not pain scale data or pain medication used (there is a disconnection between subjective data and objective data).

The analysis of the completeness of IPPN's writing concludes that information is considered complete if it includes the date, time, and name of the visit, the ppharmacist's title, and their signature, in addition to recording subjective, objective assessment and plan data on the IPPNS sheet. The IPPNs data writing is classified

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as incomplete if one or more are not writing the completeness parameter data.

RESULTS AND DISCUSSION

The profile of writing (IPPNs) by pharmacists in several government hospitals in Bukittinggi City is as follows: The highest percentage of suitability of IPPNs writing before education was at A.M Hospital (21.6%). The highest percentage of completeness of IPPNS writing before education was at the M. H Hospital Bukittinggi (99%). The highest percentage of suitability of IPPNs writing after education was given at the B. Hospital (64.3%). The highest percentage of completeness of IPPNs writing after education was at the M. H Hospital (97.9%). The highest percentage of pharmacist knowledge level before education was at A. M Hospital (87%). The highest percentage of pharmacists' knowledge level after being given education is at the B Hospital (95%). Education affects pharmacists' knowledge level of IPPN writing in several government hospitals in Bukittinggi City (p-value: 0.029). There is an effect of education on pharmacists on the profile of the suitability of writing IPPNs in several government hospitals in Bukittinggi City with a value (p-value: 0.013). There is no effect of education on pharmacists on the completeness of IPPNs writing in several government hospitals in Bukittinggi City with a value (p-value: 0.285)

Questionnaire

There were two groups of respondents who participated in this research: group 1 was respondents for the validity of the questionnaire, and group 2 were respondents at the hospital where the study was conducted. Respondents for the validity of the questionnaire came from hospital pharmacists throughout Indonesia, apart from the province of West Sumatra, while respondents for the research data were in the city of Bukittinggi, West Sumatra. The total number of respondents who participated in this research was 30 people for the validity of the questionnaire, consisting of 12 men and 18 women. Meanwhile, the total number of respondents in several research hospitals was 15 people, consisting of 3 men and 12 women. The age range of respondents ranged from 26 - 55 years, with the majority being 35 years.

The results of the validity and reliability test of the questionnaire from the results of the SPSS calculation show that all statements are said to be valid because all r values (Pearson Correlation values) obtained are more significant than the r table (0.361). The significance value (p) or sig (2-tailed) found that the p-value on all items of the 20 questionnaire statements has a value <0.05 so it can be declared valid. The results of the questionnaire reliability test obtained a Cronbach's Alpha value $\geqslant$ 0.6, namely 0.764 so that it can be declared reliable (Sutriawan A, 2021).

Knowledge level

The ppharmacist's level of knowledge regarding CPPT writing will influence the IPPN writing pattern. This level of knowledge can be obtained from educational levels, seminars, workshops and training on writing IPPN using the SOAP method. The learning culture in each hospital also greatly influences the experience of IPPN pharmacists. Pharmacist staff graduates from the institution are also one of the contributors to the culture of IPPN writing profiles.

Analysis of the "Pharmacist Knowledge Level" questionnaire on IPPNs writing with the SOAP Method in the three research hospitals (Figure 2, 3, and 4) shows that at M.H Hospital and A.M Hospital, it was in a good category before education was given. However, it is still in the category of weight I because, in theory, it is included in the group that already knows and understands. The B Hospital is in the poor category because it has a percentage value of $\leqslant$75% (Budiman and Riyanto, 2013).

Researchers realize that one of the weaknesses of questionnaires is that it is difficult to get good responses from respondents. Even though the time and atmosphere are conducive, strong motivation from respondents is still needed for good data. According to researchers, even a level of knowledge that has been assessed as good does not guarantee good IPPN writing. Other factors can influence pharmacists in writing IPPN, including a. Pharmacist's desire to continue to develop personal competence. b. Hospital systems that support the implementation of filling out IPPN include job descriptions and DCA (Details of Clinical Authority), adequate number of pharmacists with supporting educational levels, availability of supporting data to help assess drug use, and easy access in collecting supporting data for writing IPPN. c. A supportive work environment such as facilities and infrastructure (electronic drug information system and updates) and conducive collaboration between the Pharmacist team and Caregiving Professional. d. A good pharmacist work culture includes a uniform understanding of cases, routine FGD activities, continuing to look for up-to-date references and supervision by the appointed pharmacist regarding the consistency of the IPPN filling profile.

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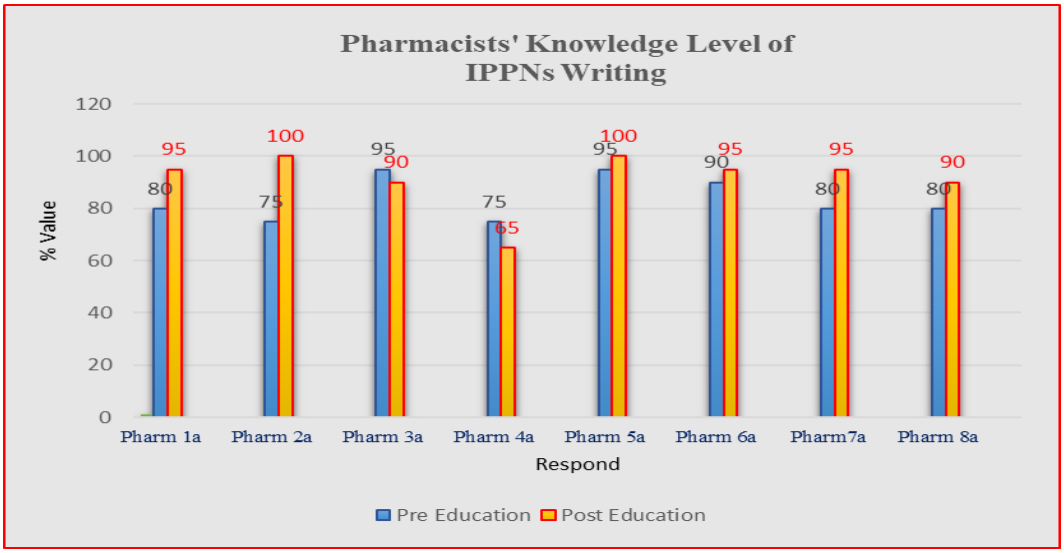

Figure 2. Histogram of the results of the pharmacist knowledge level questionnaire on CPPT writing at M. H Hospital Bukittinggi

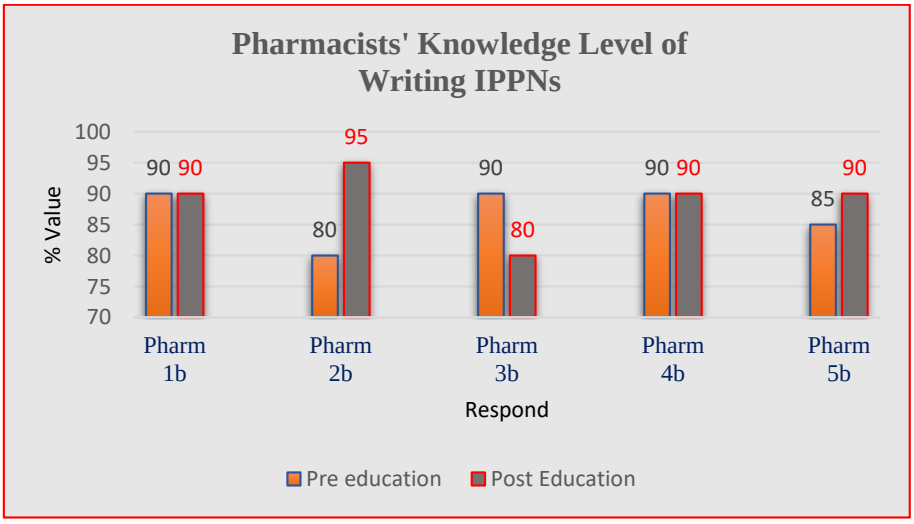

Figure 3. Histogram of the Results of the Pharmacist Knowledge Level Questionnaire on IPPNs Writing at A. M Hospital Bukittinggi

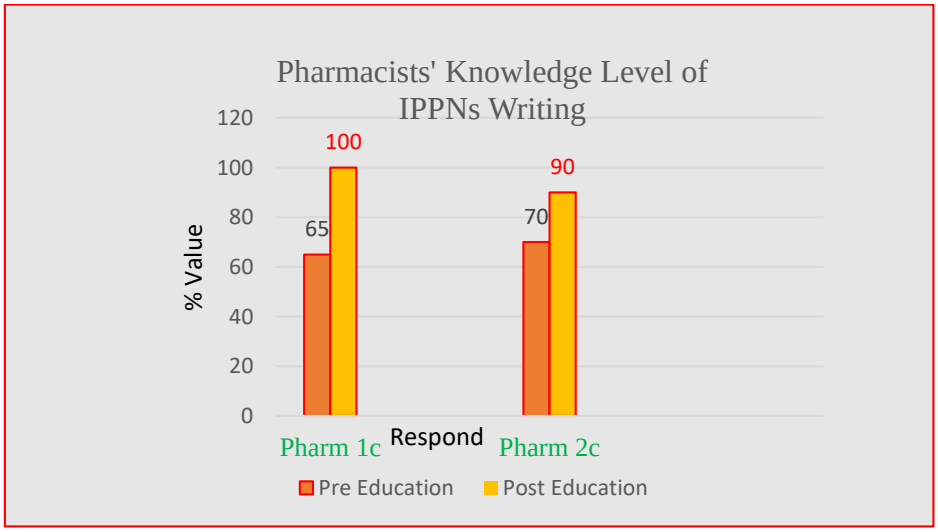

Figure 4. Histogram of the Results of the Pharmacist Knowledge Level Questionnaire on IPPNs Writing at B Hospital

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Analysis of the suitability and completeness of writing Integrated Patient Progress Notes (IPPNs)

This research was conducted at several government hospitals as research sites. However, they still have different conditions and systems. The total IPPN data was obtained from the three hospitals where the study was conducted, and there were 313 Integrated Patient Progress Notes (182 IPPNs before education and 128 IPPNs after education). The profile of the results of the analysis of the suitability and completeness of the Pharmacist's IPPNs data filling (Tables 2, 3 and 4) shows that all SOAP elements have been filled in, but there is still a lot of subjective and objective information that has not been explored so that the assessment of drug use assessment is not optimal. Plan writing has also been done, but some of them are still not in writing.

Typically, subjective data entries include (in descending order) patient complaints, medical history, drug use history, and allergy history. Data regarding drug-related social history or patient complaints related to drug use were not collected before or after education.

Table 2. Profile of the results of the analysis of the suitability and completeness of IPPNS writing at M. H. Hospital Bukittinggi

Respond	Pre-Education					Post-Education				
	N1	AIW	%	CIW	%	N2	AIW	%	CIW	%
Pharm 1a	13	0	0	12	92.3	6	0	0	5	83.3
Pharm 2a	12	0	0	12	100.0	9	0	0	9	100.0
Pharm 3a	24	0	0	24	100.0	15	12	80.0	15	100.0
Pharm 4a	6	0	0	6	100.0	15	8	53.3	15	100.0
Pharm 5a	13	0	0	13	100.0	7	4	57.1	7	100.0
Pharm 6a	13	4	30.8	13	100.0	7	0	0	7	100.0
Pharm 7a	6	0	0	6	100.0	14	0	0	4	100.0
Pharm 8a	3	0	0	3	100.0	12	0	0	12	100.0
IPPNs Total	90	4		89	100.0	75	24		74	

Description:
N 1: Number of IPPNs before education AIW: Appropriateness of IPPNs Writing
N 2: Number of IPPNs after education CIW: Completeness of IPPNs Writing

Table 3. Profile of the results of the suitability analysis and completeness of IPPNs writing at A. M Hospital Bukittinggi

Respond	Pre-Education					Post-Education				
	N1	AIW	%	CIW	%	N2	AIW	%	CIW	%
Pharm 1b	15	5	33.3	0	0	6	6	100.0	0	0
Pharm 2b	28	11	39.3	0	0	6	3	50.0	0	0
Pharm 3b	13	4	30.8	13	100.0	7	4	57.1	7	100.0
Pharm 4b	16	0	0	16	100.0	13	0	0	13	100.0
Pharm 5b	8	1	12.5	8	100.0	7	1	14.3	7	100.0
IPPNs Total	80	21		37		39	14		27	

Description:
N 1: Number of IPPNs before education AIW: Appropriateness of IPPNs Writing
N 2: Number of IPPNs after education CIW: Completeness of IPPNs Writing

Table 4. Profile of the results of the suitability analysis and completeness of IPPNs writing at B Hospital

Respond	Pre-Education					Post-Education				
	N1	AIW	%	CIW	%	N2	AIW	%	CIW	%
Pharm 1c	8	0	0	0	0	7	5	71.4	6	85.7
Pharm 2c	4	1	25	0	0	7	4	57.1	7	100.0
IPPNs Total	12	1		0		14	9		13	

Description:
N 1: Number of IPPNs before education AIW: Appropriateness of IPPNs Writing
N 2: Number of IPPNs after education CIW: Completeness of IPPNs Writing

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According to the Ministry of Health 2019, what needs to be studied from a social history perspective is the social (lifestyle) and economic situation of the patient in relation to the disease. Patient complaints related to drug use were not written by pharmacists but by researchers' observations. Pharmacists asked patients about their complaints, and some patients submitted their complaints that were not written in the IPPN. Researchers could not find them at the Ministry of Health and Welfare. Explanations and examples can be found in the 2019 Health Literature. Disease diagnosis data that should be included in the O data may also be entered in the S data (Ministry of Health, 2019). There is also subjective data with embedded striped symbols (S: ~). As a result of interviews with concerned parties, it appears that there have been no complaints. Researchers say data marked "S-" is acceptable for newborns and newborns with no medical history or disease since babies cannot communicate yet. However, for adult ICU patients or patients who lose consciousness during their visit, information should be obtained from the patient's family or other Caregiving Professional.

Typically, writing objective data includes Vital signs, medication taken data, work data (in order from highest to lowest) and disease diagnosis. Pharmacokinetic data (ADME) and clinical symptoms due to drug use were not collected before and after informed consent. Writing objective data unrelated to subjective data, not writing pain scales, and not calculating ClCr from creatinine data were improved through awareness campaigns. The diagnosis is written in O (objective) data. Disease diagnostic data includes data discussed at the study hospital. Among the survey data (validity test participants and sample participants), some diagnostic data were answered correctly, and others were answered incorrectly. In the 2019 Ministry of Health literature, the diagnosis is included in other PPAs, in this case, objective data, one of the doctor's observations, but not explicitly or in detail. The policy of the director of M. Hatta Tertiary Brain Hospital is that "diagnosis is not the pharmacist's SOAP data," which is consistent with his 1992 ASHP Literature Module 2 (American Society of Health-System Pharmacists, 1992). It is understood, according to. Whereas the diagnosis data at A M Hospital and B Hospital, some pharmacists write in subjective data and some in objective data. After being given education, the diagnoses were written by pharmacists, and pharmacists wrote diagnoses using objective data.

Review data typically includes drug-related problems, drug interactions, untreated indications, administration of drugs without indication, overdose, inappropriate drug selection, and underdosing (in order from highest to lowest) not included. Data regarding side effects or patients not taking the drug for any reason were not written before or after informed consent.

Side effect data is data that does not occur frequently. At the time of the study, there may not have been any cases in the three hospitals where the study was conducted. Data about patients who are not taking their medication for a specific reason should include information collected from the patient. When interviewing patients, pharmacists should search more thoroughly for information about the patient's medications, whether they were obtained from a health service or self-administered, including herbs. Noncompliance by patients may be due to patient discomfort with the prepared drug, perhaps a bitter taste or large amounts of the drug. It may also be due to the patient's noncompliance with medication. It may also be due to inadvertent patient non-adherence, with the result that drug evaluation is influenced by such information.

Planning data generation includes (from highest to lowest) drug therapy monitoring plans and drug therapy recommendations for each DRP, including medication regimens and counselling plans. Although advanced therapy phrases are common before training and change after training, some pharmacists still write them. Evaluation data were written into the plan before and after training. No errors were found when writing review data. Data regarding counselling plans are not included in his P data but are related to the Education and Drug Information Center (DIC). Some assessment data in the form of a DRP does not include treatment recommendations from pharmacists but is completed through Adverse Drug Reaction Monitoring (ADR) or Drug Use Evaluation (DUE). Drug counselling plans are rarely developed by pharmacists at research hospitals. Researchers' observation, experience, and consulting activities will work better if pharmacists can communicate extensively with patients and patients' families. This requires special skills but can be honed with daily practice.

The IPPN writing at M. H Hospital Bukittinggi is already using the E-IPPN system, so the implementation of filling out the IPPN can be verified through the application. IPPN integrity data is supported by a system with a password for each PPA, so visit date and time, full name and electronic signature are automatically recorded. The same subjective and objective Caregiving

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professional data (vital signs) filled in by the doctor will automatically be present in the other pharmacist/Caregiving Professional's IPPN. The hospital system has allowed each Caregiving Professional to adapt to its own needs. Data can be edited, added, and even deleted if it is not set through the SOAP method of each Caregiving Professional. Data can be accessed from anywhere with the registered pass I.D., making it very convenient for pharmacists to understand medication status smoothly. SOAP data can be completed even after patient discharge. This is the benefit of an electronic system that can fulfil the elements of accreditation assessment and guarantee legal immunity (Ministry of Health,2022).

The IPPNs filling system at the A. M Hospital is still manual. Currently, pharmacists are divided by room according to hospital policy. The pharmacists on duty stay in their respective rooms. If one pharmacist holds more than 1 room, the activities in the room follow the doctor's visit hours in each room. A. M Hospital has implemented a joint visit system so that some patient problems can be directly discussed during the visit. For DRP, especially drug interactions cannot be resolved during the visit because pharmacists need time to study literature.

Founded just a year ago, B Hospital is a Type C facility. The pharmacists' writing of IPPNs is still done manually. Not only does the pharmacist team lack a certificate of clinical pharmacy training or seminar, but the pharmacist in charge of the Ranap division is a recent graduate. During pharmacist lectures, the Head of the Pharmacy Installation and Field Practice experience guided filling out IPPNs. There isn't currently a staff pharmacist with a master's degree in clinical pharmacy at B Hospital.

The influence of education on pharmacist IPPN writing profiles

Education is one of the non-formal education methods used by pharmacists for learning. Education can be direct or indirect. Education is the independent variable that consists of attitude, knowledge, motivation, experience, and work conditionsThis research uses direct education methods through the FGD system, accompanied by SOAP writing leaflets, PowerPoint presentations, and IPPN writing framework leaflets, using the SOAP method according to the Ministry of Health 2019. The education provided requires several case examples so that there is a clear picture of the intent and purpose. Individualized education is also needed because people's ability to receive information is different.

In the three hospitals, the education was conducted in the same pattern, and the good condition of the FGD activities can affect the purpose of the FGD itself. A good presentation of information is also essential when conducting education, including the ability of the educator himself to understand what will be conveyed and the way of delivery. In the FGD activities that have been carried out, the improvement is more focused on the discussion because the IPPNs filling has taken place and is even carried out by staff who are competent in their fields. For Type A and Type B hospitals, the discussion was generally on equalizing perceptions of the SOAP framework in the 2019 Ministry of Health literature. For type C hospitals, the emphasis was on information and questions and answers.

Study limitations: This research refers to the literature on Technical Guidelines for Standards of Pharmaceutical Services in Hospitals issued by the Ministry of Health in 2019. Writing rules that are in accordance with the SOAP framework according to the literature is acceptable even though the depth of content is not yet appropriate. If the writing is correct, this research can be continued with the suitability of the content of drug therapy assessment and the usefulness of Pharmacist IPPN for other caregiving professionals.

CONCLUSION

Education succeeded in improving pharmacists' knowledge in writing IPPN correctly.

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AUTHOR CONTRIBUTIONS

Conceptualization, S.; Methodology, H.N.; Software, S.; Validation, Y.O.S.; Formal Analysis, S.; Investigation, S.; Resources, S.; Data Curation, H.N.; Writing - Original Draft, Y.O.S.; Writing - Review & Editing, H.N.; Visualization, H.N., Y.O.S.; Supervision, H.N.; Project Administration, H.N.; Funding Acquisition, S.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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