

Original Article

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Using the Danish National Evaluation as a tool to measure patient-perceived drug information

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ABSTRACT

INTRODUCTION: In 2017, as part of the Danish National Evaluation (LUP), some patients at Lillebaelt Hospital reported receiving insufficient information about their drug treatment. The aim of this study was to evaluate the effect of a multifaceted clinical pharmacist intervention on patient-reported levels of drug information received and patients' perceptions of safety and comfortability with their drug treatment.

METHODS: In this feasibility study, the intervention consisted of a multifaceted service including two patient interviews using a motivational interviewing approach. The interviews were held during admission and after discharge as a follow-up phone call. Patients were asked questions similar to those used in the LUP about the level of information they had received, and they self-evaluated their safety and comfortability with their drug treatment.

RESULTS: A total of 157 patients received the intervention; 135 patients were eligible for follow-up. Approximately 60% of the patients responded that the intervention had positively affected their feelings of safety and comfortability with their drug treatment. There was no significant difference in the patients' responses to the LUP questions regarding the level of information they had received before and after the intervention.

CONCLUSIONS: The intervention improved the majority of the patients' perceptions of safety and comfortability with their drug treatment. Although all patients received information about their drug treatment and their questions were answered, this was not reflected in their responses to the LUP questions.

FUNDING: The Development Council of Lillebaelt Hospital.

TRIAL REGISTRATION: The study was approved by the Danish Data Protection Agency.

Adverse drug reactions and drug-related hospital admissions continue to challenge both patient care and the healthcare system as such [1]. Furthermore, insufficient information about drug treatment can cause patient non-adherence, which may result in failure to achieve treatment goals and increase morbidity, hospital readmissions and unnecessary resource use [2, 3]. The Danish National Evaluation (LUP) annually evaluates the level of drug information received by patients admitted to hospital [4]. In 2017, approximately 20% of the admitted patients reported receiving insufficient information about their drugs during admission to the medical ward at Lillebaelt Hospital, Vejle (Denmark) [4]. The ward wanted to improve this result.

Multifaceted pharmacist interventions have been shown to reduce drug errors, length of hospital stay, risk of severe adverse drug reactions and number of emergency visits and hospital readmissions and to increase the quality of drug use [5-10]. Motivational interviewing has proven effective in changing behaviour, increasing

adherence and reducing hospital readmissions [11, 12]. However, whether implementing a multifaceted pharmacist intervention will affect patient-perceived safety and comfortability is unknown. It is also unknown which drug-related questions patients want answered and whether pharmacists addressing them can affect patient responses to questions asked in the LUP [4].

The aim of this study was to evaluate the effect of a multifaceted clinical pharmacist intervention on patient-reported levels of drug information received and patients' perceptions of safety and comfortability with their drug treatment.

METHODS

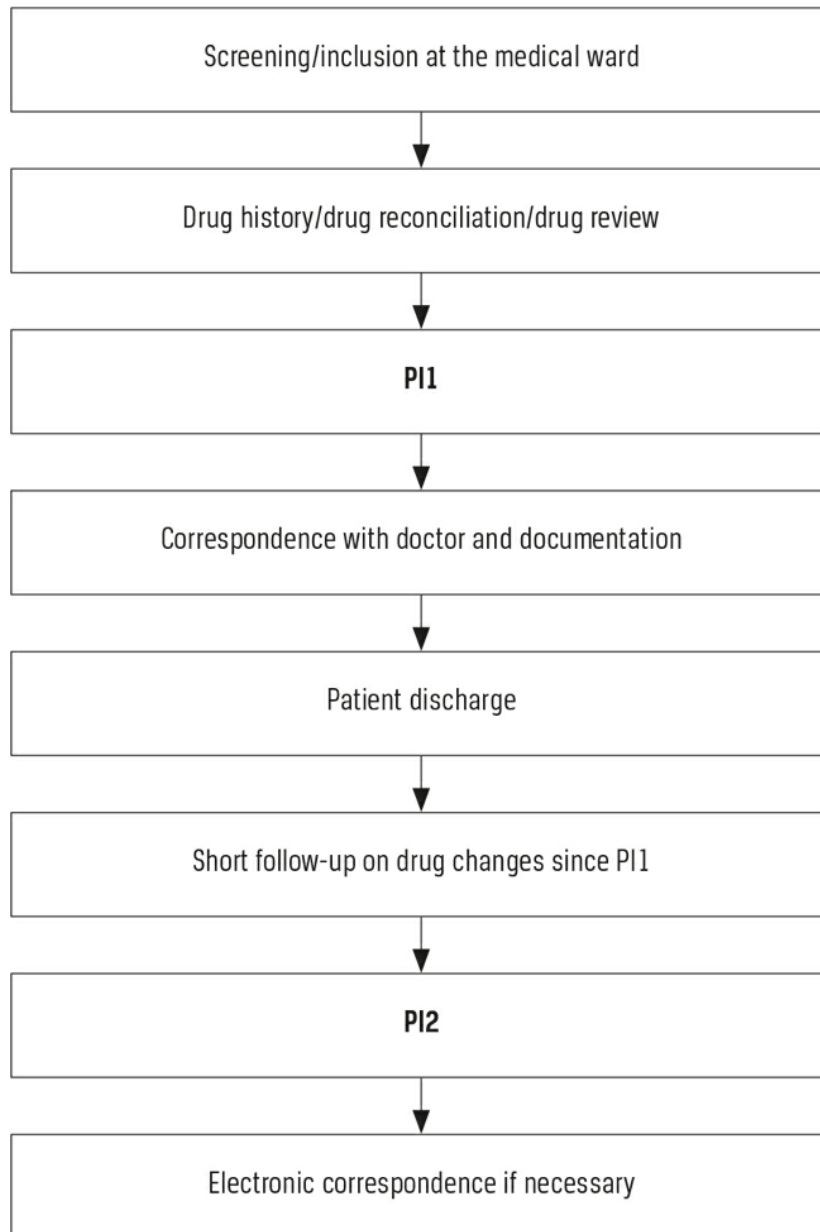
This was a feasibility study performed in a medical ward at Lillebaelt Hospital in Denmark. The ward had 38 beds and typical admission time was 3-4 days. The study was conducted from 1 October 2018 to 9 January 2019 and was registered with the Regional Data Protection Agency. All patients provided their written informed consent.

The following inclusion criteria were applied: admitted to the ward, 18 years or older and ability to speak and understand Danish. Excluded were patients who were terminally ill, under isolation precautions, delirious, unable to collaborate due to aphasia or severe dementia, and direct admission agreement. Only the index admission during the study period was considered for inclusion.

Intervention

Patients were screened for participation on weekdays. Three experienced clinical pharmacists who had completed training in motivational interviewing (MI) with certified instructors provided the intervention and data collection. The intervention (**Figure 1**) was a multifaceted service and included two patient interviews (PI1 and PI2). The intervention also included a drug history, drug reconciliation with the patient and a patient-centred drug review using the patient's electronic drug profile and electronic hospital records. The pharmacist facilitated a solution to patients' drug-related questions by answering them themselves or by ensuring follow-up by a relevant healthcare professional.

FIGURE 1 / Intervention model.



PI = patient interview.

PI1 was performed at any time during admission. It consisted of two parts; two open questions (“What are your thoughts about your drugs?” and “Which questions do you have regarding your drugs?”) using the MI approach to gather patients’ questions and thoughts regarding their medicine [13, 14]. The other part of PI1 consisted of structured questions asked in order to collect baseline data on patients’ experience of drug information received prior to the interview.

The follow-up phone call (PI2) was conducted by the same pharmacist approximately one week after discharge. This was chosen to minimise recall bias and has previously been used for successful follow-up [11, 12]. If patients needed further follow-up, a message was sent to relevant ward staff or to the patient’s GP.

PI2 consisted of the same questions as PI1 and also included an evaluation of the two PIs. The patients were asked to include PI1 when answering the questions in PI2 regarding the drug information they had received during their admission.

Demographic data comprised information on gender, age and whether patients had received support taking their drugs at home was gathered. Patient mortality at follow-up was recorded. Patient perceptions of safety and comfortability and satisfaction During PI2, patients were asked questions about their satisfaction with PI1 and PI2, respectively, and whether P1 and PI2 had produced an increase in their safety and comfortability with their drug treatment.

To obtain information on drugs, patients were asked to answer questions with five predefined answer options similar to those used in the LUP during both PI1 and PI2 [4]:

“Did you receive information about the effects and side effects of the drugs (including pain relief) you received while you were admitted to hospital?”

“Did you receive information about the effects and side effects of the new drugs you were prescribed and were to take after discharge?”

All drug-related questions asked by patients during PI1 and PI2 were written down. The pharmacist who conducted the interview categorised the questions according to pre-set categories: adherence, cost/reimbursement, dosage time/interval, drug dose, drug effect, drug formulation, drug interaction, drug strength, length of treatment, overall drug regimen, missing prescription, indication for treatment, drug list, practical issues, side effects, suboptimal drug, drug substitution and other. The questions were re-categorised by an independent, blinded pharmacist. Questions categorised differently by the two pharmacists were discussed, and a consensus was achieved.

Statistical analysis was conducted using χ^2 -test to analyse differences between patient responses to the LUP questions from PI1 to PI2. In the analysis, the category “Does not know/not relevant” was excluded because the patients who moved to and from this category were not relevant. All p-values were considered statistically significant at $p < 0.05$.

Trial registration: The study was approved by the Danish Data Protection Agency.

RESULTS

Among 353 assessed patients, 230 were eligible for participation and 123 patients were excluded. The reasons for exclusion were: 72 (59%) could not collaborate, 20 (16%) had a direct admission agreement, 19 (15%) were terminally ill, five (4%) were under isolation precautions, five (4%) had a non-index admission and two (2%) were excluded for unknown reasons. Among the 230 eligible patients, 71 refused participation and 159 consented to participate. Two patients withdrew their consent, leaving 157 patients in the cohort. At PI2, 12 patients had deceased, and ten were lost to follow-up, leaving 135 (86%) patients for follow-up. The average age of the patients was 72 years (25-95 years), 57% were female and 36% received support taking their drugs at home.

The majority of the patients responded that the intervention had improved (ranging from “to a poor degree” to “to a very high degree”) their feelings of safety and comfortability with their drug treatment at PI1 (63%) and PI2 (61%) (Table 1). The patients reporting that they had experienced no improvement often explained that they felt safe and comfortable with their drugs before the intervention. The vast majority of the patients reported that they were satisfied (ranging from “to a poor degree” to “to a very high degree”) with the intervention at PI (87%) and PI2 (95%) (Table 1).

TABLE 1 / Results on patient improvement in safety and comfortability with drugs and patient satisfaction with pharmacist-conducted patient interviews. Questions were asked during PI2 (N = 135). The values are %.

	To a very high degree	To a high degree	To some degree	To a poor degree	Not at all	Do not know/not relevant
Did the conversation with the pharmacist in PI1 during admission improve your feeling of safety and comfortability with your drugs?	16	34	13	0	14	24
To which degree were you satisfied with the conversation with the pharmacist in PI1 during admission?	24	53	10	0	0	13
Did the phone call with the pharmacist in PI2 improve your feeling of safety and comfortability with your drugs?	17	33	9	2	24	15
To which degree were you satisfied with the phone call with the pharmacist in PI2 during admission?	36	47	12	0	1	4

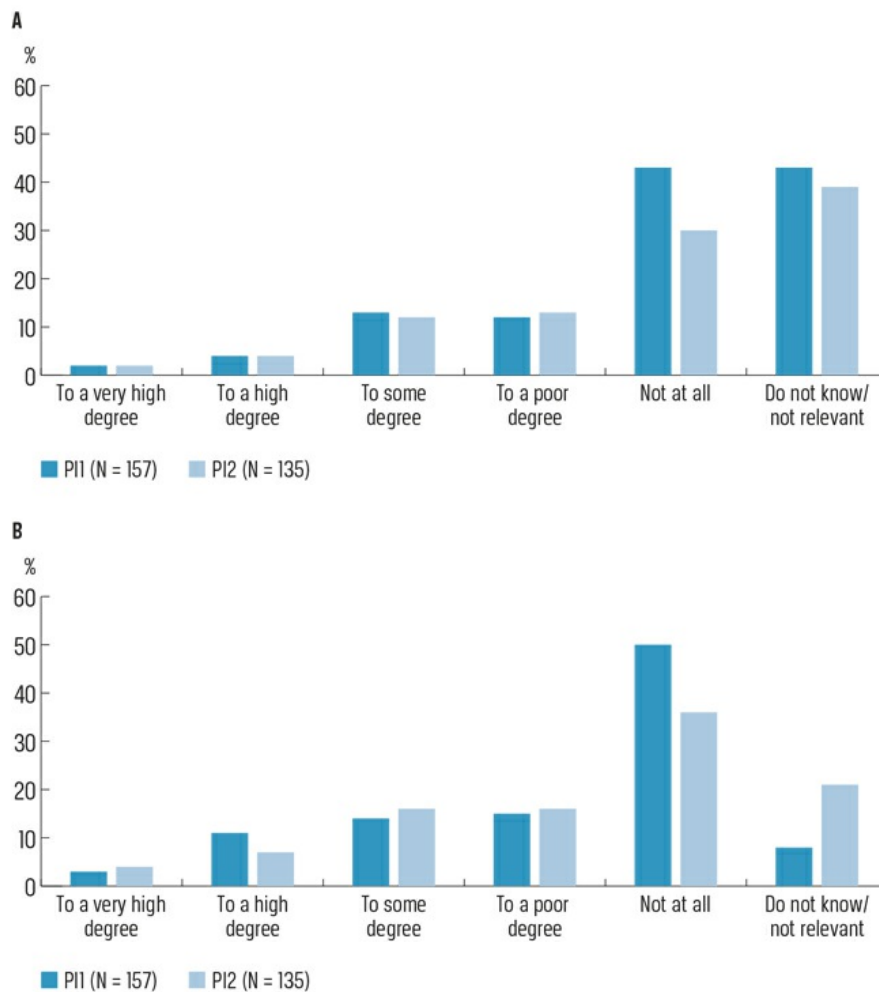
PI = patient interview.

As far as drug information was concerned, 43% of the patients answered that they had received information ranging from “to a poor degree” to “to a very high degree” on their regular drugs both at PI1 and PI2 (**Figure 2A**). Approximately 30% of the patients answered that they had received information ranging from “to a poor degree” to “to a very high degree” on new drugs both at PI1 and PI2 (**Figure 2B**).

The largest difference between the responses at PI1 and PI2 when asked about information received on regular drugs was found in the categories “not at all” and “Do not know/not relevant” (**Figure 2A**). At PI1, 50% of the patients responded that they had not received any information at all; and at PI2, 36% of the patients responded similarly. However, 8% (PI1) and 21% (PI2) of the patients answered “not relevant/does not know” in response to the same question.

The same pattern was found when patients were asked about information received on new drugs (**Figure 2B**). At PI1, 43% answered “not at all”; and at PI2, 30% answered “not at all”. However, 25% (PI1) and 39% (PI2) of the patients answered “not relevant/Do not know” in response to the same question.

FIGURE 2 / Patient-received drug information. **A.** Patients were asked the following questions about drug information received at the hospital: At patient interview 1 (PI1): "Disregarding our conversation, have you received information about the effects and side effects of the drugs (including pain relief) you receive during this admission?" and at PI2: "Did you receive information about the effects and side effects of the drugs (including pain relief) you received while you were admitted to hospital?" **B.** Patients were asked the following questions regarding drug information received about new drugs: At PI1: "Disregarding our conversation, have you received information about the effects and side effects of new drugs you have been prescribed and are to take during this admission?" and at PI2: "Did you receive information about the effects and side effects of the new drugs you were prescribed and were to take after discharge?"



No significant difference in patient responses was observed between PI1 and PI2 for any of the two questions from the LUP when we excluded the category "Does not know/not relevant" ($p = 0.58$ and $p = 0.75$, respectively). No difference was observed with respect to age or with regard to whether the patients had received support in taking their drugs in the responses to either question.

Some patients struggled to answer and understand the questions and the pharmacists had to explain the meaning of the questions to the patients. At follow-up, some of the patients had difficulty recalling that they had spoken with the pharmacist during their admission.

Drug-related questions

A total of 126 patients (80%) asked 296 (range: 1-10) drug-related questions. The majority of the questions were made during PI1 (Table 2).

TABLE 2 / Drug-related questions asked by patients.

Category	PI1, n	PI2, n	Total, n (%)
Side effects	40	18	58 (20)
Indication for treatment	31	11	42 (14)
Other: various questions which did not belong in the other categories	24	18	42 (14)
Drug effect	24	17	41 (14)
Length of treatment	14	8	22 (7)
Practical issues	11	8	19 (6)
Drug dose	10	7	17 (6)
Medication regimen overall	9	2	11 (4)
Drug interaction	4	5	9 (3)
Medication list	6	2	8 (3)
Missing prescription	2	5	7 (2)
Drug substitution	3	2	5 (2)
Cost/reimbursement	2	2	4 (1)
Dosage time and interval	0	4	4 (1)
Suboptimal drug	2	1	3 (1)
Drug formulation	2	0	2 (1)
Adherence	1	0	1 (0.5)
Drug strength	1	0	1 (0.5)
Total	186	110	296

PI = patient interview.

DISCUSSION

This study found that the multifaceted clinical pharmacist intervention improved most patients' perceptions of safety and comfortability with their drug treatment. No previous studies have measured this dimension. Some patients expressed that they already felt safe and comfortable with their drugs and often benefitted from having a resourceful person in their vicinity, e.g., a general practitioner or relatives, or they were able to seek out the information they needed themselves. Hence, patients without such resources may possibly have been the ones experiencing an increase in their perceptions of safety and comfortability owing to the pharmacist acting as

their resource person.

Hedegaard et al [15] found that an intervention using only motivational interviewing could improve patient confidence with drug use in 27% of patients, which might arguably be perceived as a similar outcome. The present study showed an increase in safety and comfortability with drug treatment in 59-63% of patients. The difference in outcome might have been caused by differences in the intervention methods used and their comprehensiveness, differences between the patient cohorts or differences caused by the patients' perceptions of the outcome measurements. Multifaceted interventions have previously been shown to increase adherence [11, 12]. It has yet to be determined if the results are co-related, i.e. whether adherence increases partly because the patients feel more safe and comfortable with their drug treatment. The patients in this study reported a high level of satisfaction with the intervention, which is consistent with previous studies [15, 16].

LUP measures the extent to which patients feel they have been given information on their medication. Patients in this study found that the questions were difficult to understand and answer. One issue with the questions is that they pose two questions at the same time, i.e. they state whether the patient has received information regarding "effects and side effects" [17]. If the patient has only received information about e.g., side effects, how should he or she respond?

All patients received information about their drugs, and they were all given the opportunity to obtain further information about their drugs by asking questions. However, approximately half of the patients still reported that they had received no information during their admission.

reported that they had received no information. This may have been due to the patient population and severity of illness at the time of the intervention during admission.

The large number of and variation in the patients' questions indicated that they felt insufficiently informed about their drug treatment at the time of the interviews. This indicates that patients have different individual information needs, which is supported by Kusch et al's study [18]. Using a multifaceted intervention may be a solution to accommodate various patient information needs. However, our results question whether the correct time to give information is during the patients' admission.

In this study, the pharmacists performed the evaluation themselves and collected the responses orally. This may have led to social desirability bias, i.e. more positive responses. Using an impartial interviewer might have eliminated the risk of bias, but in order to reduce the number of contacts for the patient, this approach was not chosen. Electronic data collection was not used due to the risk of a lower response rate and non-response bias.

CONCLUSIONS

The multifaceted clinical pharmacist intervention improved most patients' perceptions of safety and comfortability with their drug treatment. Although all patients received information about their drug treatment and their questions were addressed, this was not reflected in the patients' responses to the LUP questions.

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