

研究成果の刊行に関する一覧表

書籍

著者氏名	論文タイトル名	書籍全体の編集者名	書 籍 名	出版社名	出版地	出版年	ページ
今井 博久	第1章 ビアーズ基準と高齢者の薬物療法	今井 博久 福島 紀子	これだけは気をつけたい高齢者の薬剤処方	医学書院	東京都	印刷中	1-8

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
佐藤 秀昭 庄野 あい子 今井 博久 他3名	病棟薬剤業務の導入によるインシデント発生の防止効果の検討	薬事新報	2799	35-37	2013
佐藤 秀昭	病棟薬剤業務の導入により薬物療法はどのように変わったか 「病棟薬剤業務 薬物療法の質の向上を図る」	Innovative Pharmacist	1(2)	10-11	2013
M Onda, H Imai, Y Kataoka, M Takamatsu, et al	A Preliminary Study about the Relationship between Workload and the Outcomes of Community Pharmacists' Home Visiting Service	社会薬学	32 (2)	2-7	2013

病棟薬剤業務の導入によるインシデント発生の防止効果の検討

イムス三芳総合病院薬剤科¹⁾, 明治薬科大学公衆衛生・疫学教室²⁾
イムス三芳総合病院看護部³⁾, 国立保健医療科学院⁴⁾

佐藤 秀昭¹⁾, 鈴木 洋子¹⁾, 庄野あい子²⁾
大山 恵子³⁾, 竹内 由美³⁾, 今井 博久⁴⁾

諸言

今, 医療が急速に多様化する時代を迎え, 薬の専門家である薬剤師が, 薬物療法に積極的に関わることは, 医療安全の確保の観点から非常に有益である。従来, 薬剤師は調剤過誤防止対策の時代から院内の医療事故防止対策, そしてチーム医療による「質の高い安心・安全な薬物療法」の確立に向け積極的に取り組んできた。平成24年度診療報酬改定において, 薬剤師が病棟において病院勤務医等の負担軽減及び薬物療法の有効性, 安全性の向上に資する薬剤関連業務を実施している場合に算定できる病棟薬剤業務実施加算が認められた。

今回, うっかりミス, 抜け, 思い違いなどの深刻な医療事故を引き起こしうるインシデントについて, 本院で報告された医薬品関連のインシデント事例を解析し, 病棟薬剤業務の実施によるインシデントの発生防止の有用性について報告する。

病院概要

当院 (イムス三芳総合病院) は, 20診療科, DPC導入, 病床数238床 (障害46床), 医師41名 (常勤医26名), 看護師196名, 薬剤師19名, 薬剤補助6名 (2名募集中), 院外処方せん発行率99%, 薬剤管理指導業務件数520件/月, 無菌製剤処理加算 (抗悪性腫瘍薬) 40件/月, 病棟薬剤業務施設 (1病棟に薬剤師3名常駐), 365日24時間対応病院である。

調査方法

病棟薬剤業務を導入した4病棟について, 導入前の平成24年1~5月と導入後の平成24年6~10月までの各5ヵ月間に医療安全管理者に提出され

た「インシデント・アクシデント・転倒・転落報告書」(以下報告書と略す) について調査した。統計解析には, IBM SPSS Statistics version 20を用いた。なお, インシデントは, ヒヤリ・ハット (レベル0), ミスをしたが実害なし (レベル1), 事故が生じたが治療の必要なし (レベル2) と定義した。なお, 調査期間中, 治療・処置を要するレベル3~レベル5のアクシデント事例の報告はなかった。

結果と考察

薬物療法は, 医師の処方, 指示, 調剤, 配薬 (与薬), 服用 (投与), この一連の過程で多くの人と多くの行為を経て進められ, 多くのインシデント事例が報告されている¹⁾。報告書の調査から, 医薬品に関連するインシデント報告数は, 図1に示すように病棟薬剤業務導入前の81件 (総報告数

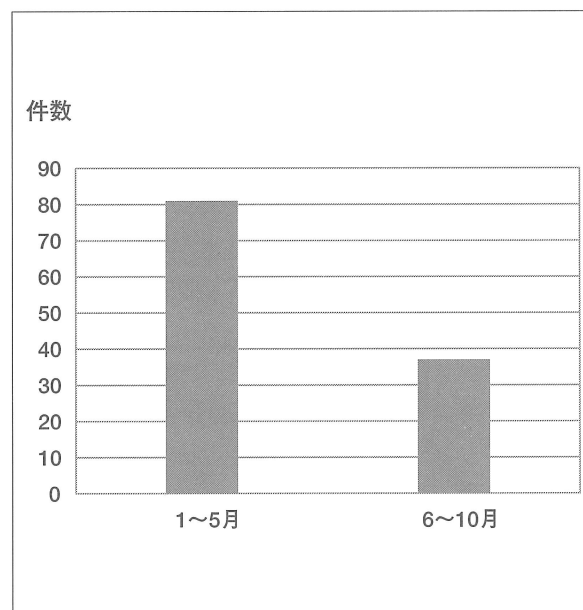


図1 病棟薬剤業務導入前後の医薬品に関連するインシデント報告件数

の35%)から病棟薬剤業務導入後は37件(総報告数の24%)と減少し、病棟薬剤業務がインシデントの防止に有用であることが示唆された。

通常、安全な薬物療法の確保には「正しい薬剤」「正しい量」「正しい方法」「正しい時間」「正しい患者」の5つの条件が満たされているか、確実に確認する必要があると提唱されている²⁾。この条件を確実に満たすための支援業務が、本院で行っている病棟薬剤業務に含まれていることが示唆された。今回、調査項目を1) 医師の指示受けミス(患者状態や手術・検査による医師の処方変更・中止の指示受けと申し送りの間違いによるインシデント)、2) 与薬忘れ(思い込みなどによる与

薬忘れ)、3) 確認ミス(服用の有無や点滴速度などの確認を忘れたインシデント)、4) 誤投与(投薬の間違い、患者の取り違えなどによるインシデント)、5) 調製ミス(輸液の混合調製忘れなどのインシデント)、6) 調剤ミスの6つに分類し、調査項目ごとにインシデントの報告数を比較した。

この結果、病棟薬剤業務の導入により、確認ミス、医師の指示受けミス、与薬忘れ、誤投与の順にインシデントの報告件数が減少した(図2)。さらに、この項目について解析すると、病棟薬剤業務導入前後の4つの分類の内訳ごとの主な報告数は、患者服用の有無の確認ミス、麻薬の投与後の廃棄間違い、インシュリンの定時投与忘れ、薬剤の投与間違いなどの報告数が減少した(図3)。薬剤の投与間違いは、調剤薬または持参薬を1回服用ごとにピルケース等に取り揃え交付している施設と未実施施設でのインシデント発現頻度に有意差が認められ、注射剤も含め患者ごとの取り揃えは、インシデントの抑止に有用であると報告している³⁾。

しかし、本院では、病棟薬剤業務導入前から、注射剤及び内服剤については、患者個人セットで払い出している。このことから、当院で実施している①看護師用の投薬表の作成及び見直し、②患者の転棟に伴う病棟担当薬剤師及び看護師への患者情報の申し送り、③持参薬の運用について病棟への情報提供、④処方変更・中止・追加等の処方

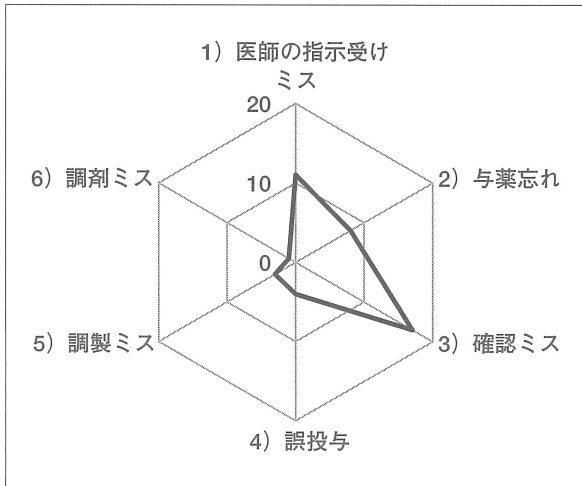


図2 病棟薬剤業務導入前後の各分野のインシデント報告件数の減少数の比較

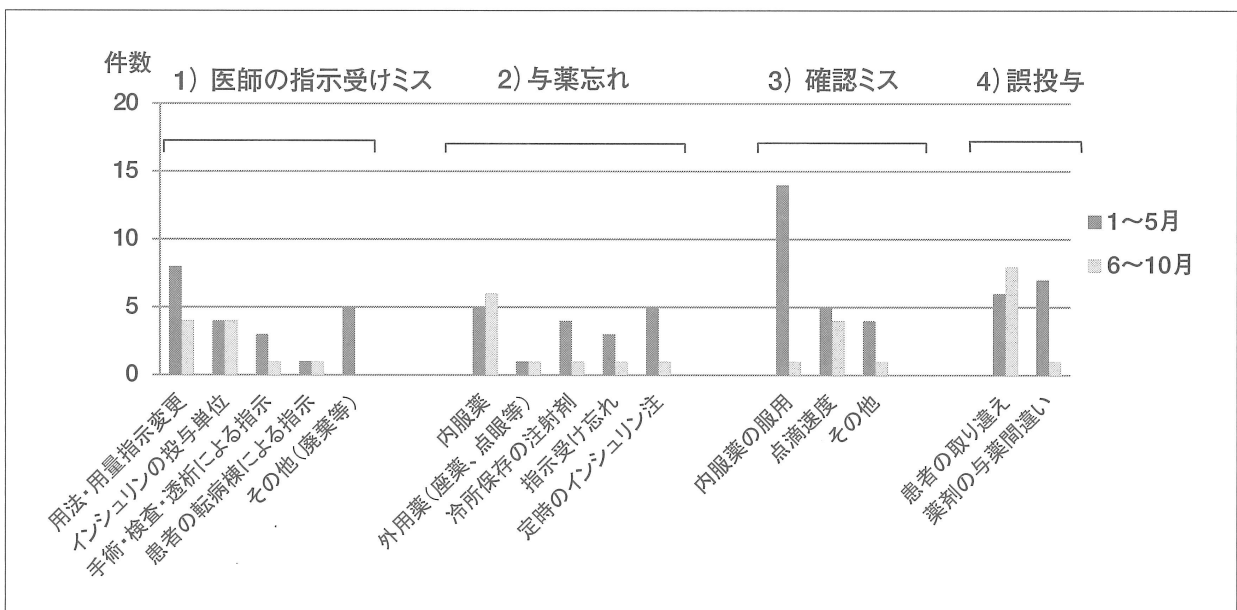


図3 病棟薬剤業務導入前後の各分野のインシデント報告件数の内訳

情報の申し送りなどがインシデントの抑止力になる有力な病棟薬剤業務^{4), 5)}と考えられた。特に、術前術後の中止薬剤, 点眼剤などの冷暗所保存薬剤, 麻薬, インシュリンの定時投与などの適切な薬物療法を確保するための必要な情報について投薬表の備考欄への記載は, 看護師への申し送り手段として有用と受け止めている。

結論

今回の調査から, 病棟薬剤業務は, 重大な医療事故につながる可能性のある潜在的リスクを把握し, これから報告されるインシデント事例も含め医師・看護師などと協同で効果的な防止対策を図る有効な手段であることを明らかにした。さらに, 薬剤の重篤な副作用が未然に防ぐための処方提案など, 安全で質の高い薬物療法に取り組んでいる。

謝辞

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- 4) 佐藤秀昭, 病棟薬剤業務の導入により薬物療法はどのように変わったか「質の高い安心・安全な薬物療法」の実現に向けて, innovative pharmacist 1 (1), p10~11 (2013)
- 5) 佐藤秀昭, 病棟薬剤業務の導入により薬物療法はどのように変わったか 薬物療法の質の向上を図る, innovative pharmacist 1 (2), p10~11 (2013)

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病棟薬剤業務の導入により薬物療法はどのように変わったか

病棟薬剤業務 薬物療法の質の向上を図る

医療法人社団 明芳会 イムス三芳総合病院 薬剤科 佐藤 秀昭

はじめに

医療サービスが急速に多様化する時代、チーム医療において処方医との十分なコミュニケーション(信頼関係)を取り「質の高い安心・安全な薬物療法」の提供に携わることは、薬剤師の職責である。病棟薬剤業務は、この職責を果たすための重要なテーマである。病棟薬剤業務の導入により、医師でも看護師でもない、薬剤師の専門性はどのように発揮されるべきなのか。入院患者の薬物療法に対する薬剤師の役割について、常に薬剤科内で論じている。

前号で病棟薬剤業務は、看護師との協働による効果的な事故防止対策を担う有用な業務だと報告した。今回、薬物療法の質の確保に貢献する薬剤師の役割について記述する。すなわち、チーム医療で収集した多くの患者情報を解析し、「処方薬による重篤な副作用を回避し期待される薬物治療を提供する」、この職責を果たすために当院で実施している病棟薬剤業務を紹介する。

I 処方変更に影響を及ぼす要因

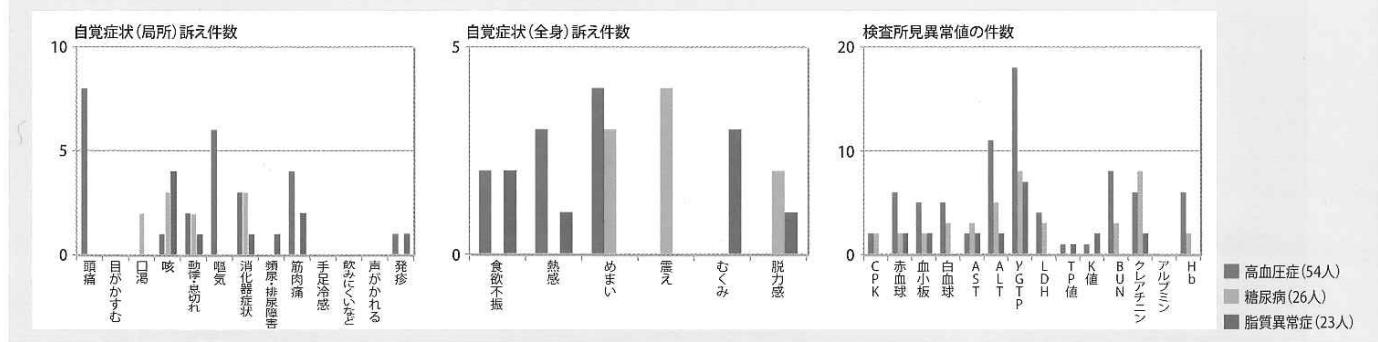
患者受診時の全身症状・局所症状の自覚症状と検査所見について、図に示した。全身症状では、高血圧症の患者(54人)はめまいと熱感、糖尿病の患者(26人)は震えと脱力感、脂質異常症の患者(23人)にはむくみなどが見られた。局所症状としては、高血圧症の患者は頭痛、嘔気、筋肉痛、糖尿病の患者は口渇等、脂質異常症の患者は咳、動悸・息切れ、筋肉痛等治療薬による副作用症状や疾患によると考えられる症状を訴えていた。検査所見は、高血圧症、糖尿病、脂質異常症の患者間で多様な異常値が認められた。このような結果から、患者の訴えた自覚症状、検査所見などは、処方変更に影響を及ぼしていることが示唆された¹⁾。現在、当院での病棟薬剤業務実施後の入院処方せん1,051枚中処方変更した283枚について、自覚症状、身体所見、検査所見などの患者情報を解析・評価し、

処方変更の要因について検討している。

日本病院薬剤師会将来計画委員会が2012年6月に報告した「薬剤師によるフィジカルアセスメントーバイタルサインを学ぶ(医薬品に関連した副作用としての身体所見を把握するための基礎を修得する)」のp.8に、大野勲先生(東北薬科大学)が、「患者の自覚症状、身体所見、検査所見の中で、どの項目について情報を収集するかは、医師、看護師などの医療チームスタッフと確認しておく必要がある。なぜなら、上述のように、各職種により患者情報の利用目的が異なるので、当然収集する項目も異なるからである。…(中略)薬剤師が『治療薬の有効性』を判定するためには、疾病臓器に視点を置いて、基本的には医師と同じ項目を観察するが、「治療薬の安全性」を確保するためには、全身的な視点から、治療薬の副作用や薬物動態に関連する項目を観察することになる」と記載している。この指針を参考に、病棟薬剤業務シートを考案した。

参考資料 1) 日本病院薬剤師会診療所委員会: 外来処方せんの変更に影響を及ぼす薬剤師業務等に関する調査報告、日病薬誌 2013;49(1):13-18

■図：慢性疾患患者情報の主な項目とその件数

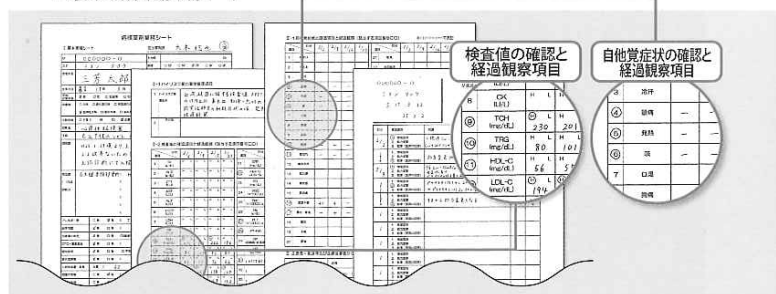


II-1 病棟薬剤業務シート

病棟薬剤業務シートは、薬歴管理表(内服・外用薬、注射薬)、NST、ICT、褥瘡対策、がん化学療法、緩和ケアの実施表、緊急安全性情報などの実施データと一緒に前号で紹介した患者情報ファイル(前号の写真参照)に綴じている。この病棟薬剤業務シート(写真)には、①患者ID番号、患者氏名、入院目的、現疾患、既往歴などの基本情報、②病棟薬剤業務の実施項目であるハイリスク薬の薬学管理項目、③処方薬の副作用回避および治療薬の有効性を確認するための検査値と自覚症状の経過観察の記録、④患者・家族等および医療従事者からの

情報提供、⑤医師への情報提供および処方提案した経過記録などのデータが記録される。病棟薬剤業務シートは、薬物療法の質を高める処方提案や情報提供には欠かせないシート(差し込み)であり、このシートへの記入は、これからの薬剤師の病棟薬剤業務の根幹を担うものとなる。すなわち、病棟薬剤業務の第一歩と考える。

■写真：病棟薬剤業務シート



II-2 医師でも看護師でもない、薬剤師の専門性を発揮する役割は何か

病棟薬剤業務シートには、ID番号〇〇、患者氏名〇〇、男性、70歳、心原性脳梗塞の治療のため脳外科に入院、抗生剤で発疹、持参薬無、認知症状無、身体障害無など記入。ハイリスク薬は、トロンビン阻害薬のダビガトランcap(75)4cap 2×1が処方、薬学管理項目として、消化管出血などの重篤な副作用を回避するために、APTTの検査値、口内出血、鼻出血、動悸・息切れなど貧血の自覚症状、間質性肺炎による発熱や咳などの経過観察、肺音の異常を経過観察(当院では未実施)。また、患者が高齢者で腎排泄型の薬剤なので投与量を決定するためにCcr(ml/min)の経過観察が必須。これらの情報に基づき、

検査値の確認と経過観察項目は、9、10、11、12、13、14、15、16、22、27、28、31番、自覚症状の確認と経過観察項目は、4、5、6、10、11、16、17、23番を選択し、さらに追加項目として31(黒色便)、32(下血)、33(口内出血)、34(鼻出血)とした。医師への情報提供および処方提案については、経過観察によるCcr(ml/min) ≤ 50、鼻出血や口内出血の症状などから評価し、ダビガトランcap(75)の4capからダビガトランcap(110)2capへの減量を提案した。

この事例では、一人の患者への薬剤師の役割(病棟薬剤業務)について解説した。このように医師、看護師とは異なった「処方薬による重篤な副作用の回避(治療薬の安全性)」の視点で薬剤師の職責を果たすことにより、医師、患者などとの信頼関係が構築され、チーム医療の一員としての新たな役割が生まれると信じる。

おわりに

現在、「薬剤師の本質的な役割は、処方設計にかかわることである」という仮説を立て、それを証明するための調査研究を行っている。本原稿が、皆様にとってこれからの薬剤師の本質的な役割について考える糸口になれば幸いである。

最後に当院は、診療科12科、病床数238床(一般病床192床、障害者病床46床)、院外処方せん発行率99%、薬剤師数(常勤)19人、補助員3人(非常勤)、病棟薬剤業務実施加算届出施設で、1病棟に専任薬剤師2~3人を配属している。

Original Article

A Preliminary Study about the Relationship between Workload and the Outcomes of Community Pharmacists' Home Visiting Service

Mitsuko Onda¹⁾, Hirohisa Imai²⁾, Yuta Kataoka¹⁾, Makoto Takamatsu¹⁾, Masako Tanaka¹⁾,
Hidekazu Tanaka¹⁾, Yoko Nanaumi³⁾, Yukio Arakawa¹⁾

¹⁾ Clinical Laboratory of Practical Pharmacy, Osaka University of Pharmaceutical Sciences,

²⁾ National Institute of Public Health, ³⁾ Advanced Pharma Research Office

Abstract : Aim : To examine any relations of workload and outcomes of pharmacists' home visiting service for medication management and guidance. Survey Target : Managing pharmacists and home-visiting pharmacists from community pharmacies of the Osaka Pharmaceutical Association's Yao and Toyonaka branches as of March, 2012. Methods : Survey forms regarding drug management and guidance at patients' homes were mailed, requesting mail or online response. Workload indexes were visit frequency and work time on site. The relation of workload and its outcomes was examined using univariate analysis regarding three items : change in unused medication amount ; detection of side effects during visits ; change in prescription. SPSS ver. 20 for Windows was used for statistical analysis. Results : 90 of 201 pharmacies responded (collection rate 44.8%), and 110 home patients' data were analyzed. 5-to-15-minute actual work time scored highest (57.4%), followed by less than 5 minutes and 15 to 30 minutes, both at 21.3%. Visit frequency of twice a month scored highest (70.4%), followed by once a week (19.4%), once a month (7.4%), and once in more than one month (2.8%). 5-minute or longer patient visits had a tendency of higher percentage of patients whose unused medication decreased after visits started than less-than-5-minute visits ($P=0.072$). "Once a week" visits had a tendency of higher percentage of pharmacists detecting side effects than less frequent visits ($P=0.061$) and changing in prescription ($P=0.085$). Conclusion : The results above implied the relationship between workload and outcomes incurred by pharmacists' home visits for medication safety management and guidance.

Key words : home-visiting service, community pharmacy, pharmacist, workload, outcomes

1. Introduction

Before the enforcement of the Long-Term Care Insurance Act in April 2000, main pharmacy services included filling prescriptions and supplying non-prescription drugs and other products. The implementation rate of the "drug management and guidance for home-visiting service," which had already been made compensable under the national health insurance system, was not too high.¹⁻³⁾ Nevertheless, users of home care services were hoping that pharmacists would check side effects, explain and instruct dose regimens, assist in drug storage management, and consult them.³⁾

Later in 2005, the authors conducted a survey again with the purpose of examining the changes in the structural features of pharmacy functions as a result of the implementation of Long-term Care Insurance program (hereinafter "the program").⁴⁾ The results revealed that the implementation of services such as "provision of nursing care products," "management of community residents and engagement in educational

activities on proper drug usage," "proper management and use of medication record ("YAKUREKI"), "management and guidance on drugs involved in home visits," "coordination with community healthcare institutions," and "coordination with nursing, caregiving, and other professions" had improved significantly, while about 30% of the pharmacies surveyed were actually visiting the homes of their patients.

The revised Long-Term Care Insurance Act enforced in April, 2012, positioned as the most important issues the strengthening of the foundation for building an "integrative community care system," which would seamlessly provide medical, nursing care, preventive, residential and life-related assistance services, and promotion of at-home healthcare under the integrative community care system. The revised Act stipulates that a review be conducted about the occupations that will provide these services and evaluations by residence location for management and guidance for in-home treatment, which is one of the home-visiting

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¹⁾ 大阪薬科大学臨床実践薬学研究室、²⁾ 国立保健医療科学院、³⁾ アドバンス・ファーマリサーチオフィス
別刷り請求先 : 恩田光子 E-mail: onda@gly.oups.ac.jp

services for home-bound patients. Therefore, a need will arise to clarify the relationship between the workload and the content of a pharmacist's home visiting and the outcomes.

Multiple case reviews have been reported on the involvement of pharmacists in home care and its results, including involvement with in-home rehabilitation,⁵⁾ intervention in drug administration issues,⁶⁾ support for HPN (Home Parenteral Nutrition) patients,^{7,8)} and support for pain control in home terminal care. Multiple reports have also been published on the current status of pharmacists' home-visiting service in the home care arena.⁹⁻¹¹⁾ However, there are no reports that have examined the workload in relation to its outcomes. In this study, a survey was conducted with the purpose of examining the relation of workload and its outcomes in terms of safety management and guidance of medication involved in home visits by community pharmacists. This study was conducted with the approval of the Research Ethics Review Board of Osaka University of Pharmaceutical Sciences.

2. Survey Target and Method

The survey forms were sent to managing and home-visit pharmacists who worked for pharmacies belonging to the Yao and Toyonaka branches of the Osaka Pharmaceutical Association. The pharmacists were requested to respond to questions regarding pharmacy attributes and the patients visited. We asked for only one response from each pharmacy regarding pharmacy attributes, and requested the managing pharmacist to enter these attributes. In addition, we requested those pharmacies that were conducting home visits to provide responses for each patient's case. Home-visiting pharmacists were asked to select up to five patients (any feasible number of patients for pharmacies that had less than five home-visit patients) out of those they visited for medication safety management and guidance, and to respond to questions on each case. We did not establish any specific criteria for selecting home-visit patients. Instead, we asked the pharmacists to select at their own discretion patients for whom pharmaceutical care was relatively frequent. Survey forms were mailed and response was requested either via mail or online. The survey was conducted for a 10-day period from March 12 to 21, 2012.

The main survey items were :

pharmacy attributes (actual number of prescriptions

filled per day, actual number of employee pharmacists, actual number of pharmacists registered as "home visitor", and actual number of patients visited over the past month),

workload indicators (frequency of visits to patients' homes (hereinafter "visit frequency"), and work time at a patient's home per visit (hereinafter "work time")),

patient attributes (sex, age, actual number of prescribed drugs (a total of oral drugs, single-dose drug packages, and injection drugs that were prescribed last)),

indicators of outcomes from home visits (change in the amounts of unused drugs (hereinafter "amount change in unused drugs"), detection of side effects during visits (hereinafter "detection of side effects")), and change in prescription (hereinafter "change in prescription")

The data on pharmacy attributes were used to examine the relationship between the presence of a home visiting service and pharmacy attributes by implementation of Mann-Whitney U test. Also, to test the relation of pharmacy attributes and workload, Kruskal Wallis test was conducted.

Then, to test the relation of workload and its outcomes, Kruskal Wallis test was conducted for the visit frequency and its outcome indicators, as well as for the actual work time and its outcome indicators, respectively. SPSS version 20 for Windows was used for statistical analysis, and a significance level of 5% was adopted for determining significant differences.

3. Results

(1) Collection Status

90 pharmacies (35 from Yao and 55 from Toyonaka) out of 201 pharmacies (80 in Yao and 121 in Toyonaka) responded, with the collection rate of 44.8% (43.8% for Yao and 45.5% for Toyonaka). 44 of the pharmacies that responded, or 48.9%, had the home-visit drug management and guidance program in place, and data from 110 homebound patients were obtained. The following is the distribution of patient data per pharmacy:

5 patients : 11 pharmacies

4 patients : 3 pharmacies

3 patients : 4 pharmacies

2 patients : 5 pharmacies

1 patient : 21 pharmacies

As far as patient attributes, there were 46 males (41.8%) and 57 females (51.8%). The sex of 7 patients (6.4%) was unknown. The average age was 79.7 years

Table 1 Pharmacy attributes based on data match with patients

Items	Visiting Pharmacy ¹⁾		Non-visiting Pharmacy ²⁾		P
	N	average	N	average	
Actual number of prescriptions filled per day/pharmacist	34	19.5	37	21.9	0.608
Actual number of employee pharmacists (full-time equivalent)*	36	3.4	38	3.4	0.922
Actual number of pharmacists registered as "home visitor" (full-time equivalent)*	28	1.6	31	0.8	0.003

(Mann-Whitney U test)

Full-time equivalent* : A part-timer is counted as 0.5 person.

¹⁾ Pharmacy which practice home visiting (n=43)

²⁾ Pharmacy which not practice home visiting (n=41)

(unknown : 6)

Table 2 Relationship between pharmacy attributes and workload

Pharmacy Attributes	Ans.	Workload							
		Visit Frequency ¹⁾				Actual Work Time ²⁾			
		Once a week	Twice a month	Once a month, or once in more than a month	P	<5 min	5-15 min	>15 min	P
Actual number of prescriptions filled per day/pharmacist	≤19	14 (25.0%)	39 (69.6%)	3 (5.4%)	0.118	9 (16.1%)	37 (66.1%)	10 (17.8%)	0.445
	>20	5 (11.6%)	32 (74.4%)	6 (14.0%)		9 (20.9%)	23 (53.5%)	11 (25.6%)	
Number of employee pharmacists (full-time equivalent)*	3	14 (26.4%)	36 (67.9%)	3 (5.7%)	0.097	17 (32.1%)	25 (47.2%)	11 (20.8%)	0.023
	>3	7 (13.0%)	39 (72.2%)	8 (14.8%)		6 (11.1%)	37 (68.5%)	11 (20.4%)	
Number of pharmacists registered as "home visitor" (full-time equivalent)*	1.5	10 (18.9%)	37 (69.8%)	6 (11.3%)	0.932	18 (34.0%)	27 (50.9%)	8 (15.1%)	0.007
	>1.5	11 (21.2%)	36 (69.2%)	5 (9.6%)		5 (9.7%)	32 (61.5%)	15 (28.8%)	
Number of patients visited for the last month	≤5	5 (10.2%)	36 (73.5%)	8 (16.3%)	0.032	14 (28.6%)	25 (51.0%)	10 (20.4%)	0.320
	>5	15 (27.3%)	37 (67.3%)	3 (5.4%)		9 (16.4%)	34 (61.8%)	12 (21.8%)	

(Kruskal Wallis test)

¹⁾ Choices: Once a week, Twice a month, Once a month, Once in more than a month

²⁾ Choices: <5 min, 5-15 min, 15-30 min, >30 min

(S.D. 13.0). Actual number of prescribed drugs was 8.5 (S.D. 3.3), with the highest number being 8.

(2) Pharmacy Attributes

Table 1 shows the relationship between the presence of a home visiting service and pharmacy attributes. The factor related to the presence of a home visiting service was actual number of pharmacists registered as "home visitor."

(3) Workload Indicator

1) Visit Frequency (Choices : once a week, twice a month, once a month, once in more than a month)

69.1% of visiting pharmacists visited twice a month, followed by once a week (19.1%), once a month (7.3%), and once in more than a month (2.7%). 1.8% was unknown.

2) Actual Work Time (Choices : <5 min, 5-15 min, 15-30 min, >30 min)

The highest number of pharmacists visited patients for 5 to 15 minutes (56.4%), followed by less than 5 minutes (20.9%), 15 to 30 minutes (19.1%), and more than 30 minutes (1.8%). 1.8% was unknown.

(4) Relationship between Pharmacy Attributes and Workload (Examination by Kruskal Wallis test)

1) Visit Frequency

Between the group of patients who received visits once a week and the group that received visits less frequently, there was a significant difference in number of patients visited for the last month. Also, the group of patients who received "Once a week" visits had a tendency of fewer staff members than the group of patients who received less frequent visits (Table 2).

2) Actual Work Time

Between the group of patients for whom the actual work time during pharmacists' home visits was 5 or more minutes and the group for whom the actual work time was less than 5 minutes, there was a significant difference in the average number of pharmacists registered as "home visitor" and staff pharmacists compared to the shorter-period group (Table 2). It was confirmed that the longer-period groups had more pharmacists registered as "home visitor" and fewer

staff members compared to shorter-period group.

(5) Distribution of Outcome Indicators

The amount of unused drugs decreased for 40.0% of the patients since the start of home visits, while the amount either did not change or increased for 54.5% of them. Furthermore, pharmacists detected signs of side effects or other adverse events arising from drugs during home visits for 23.6% of the patients. Decreases in the administration amounts, changes in dose regimens, and changes in types of prescribed drugs occurred after pharmacists contacted or discussed with the physicians for 17.3%, 14.5%, and 25.5% of the patients, respectively (Table 3).

(6) Relationship between Workload and Outcome Indicators (Examination by Kruskal Wallis test)

1) Relation of Visit Frequency and Outcome Indicators

For patients who received home visiting service once a week, pharmacists tended to detect signs of side effects or other adverse events arising from medication during home visits and change in prescription more frequently than for the less-frequency groups (Table 4).

2) Relation of Actual Work Time and Outcome Indicators

The amount of unused drugs tended to decrease more for patients who received 5 or more minutes of visitor

Table 3 Distribution of outcome indicators

Outcome Indicator	Ans.	N	%
Change in the amounts of unused drugs (Has the amount of unused medication changed since the start of visits?)	1. Decreased	44	40.0
	2. No Change	55	50.0
	3. Increased	5	4.5
	4. No Response	6	5.5
Side effects detected (Have signs of side effects or other adverse events arising from drugs been detected?)	1. Yes	26	23.6
	2. No	73	66.4
	3. No Response	11	10.0
Change in prescription (Has the prescription changed after contact or discussion with the doctor?); Multiple choice	1. Decreased	19	17.3
	2. Increased	13	11.8
	3. Change in Use Regimen	16	14.5
	4. Change in Medication	28	25.5
	5. No Change	47	42.7

Table 4 Relationship between workload and outcome indicators

Outcome Indicators	Ans.	Workload							
		Visit Frequency				Actual Work Time			
		Once a week	Twice a month	Once a month, or once in more than a month	P	<5 min	5-15 min	>15 min	P
Change in the amount of unused medication (Has the amount of unused medication changed since the start of visits?) ¹⁾	Yes	4 (9.1%)	35 (79.5%)	5 (11.4%)	0.168	4 (9.1%)	28 (63.6%)	12 (27.3%)	0.072
	No	14 (23.3%)	40 (66.7%)	6 (10.0%)		16 (26.7%)	33 (55.0%)	11 (18.3%)	
Side effects detected (Have signs of side effects or other adverse events arising from medication been detected?) ²⁾	Yes	9 (34.7%)	14 (53.8%)	3 (11.5%)	0.061	7 (26.9%)	11 (42.3%)	8 (30.8%)	0.142
	No	10 (13.7%)	55 (75.3%)	8 (11.0%)		11 (15.1%)	47 (64.4%)	15 (20.5%)	
Change in prescription (Has the prescription changed after contact or discussion with the doctor?) ³⁾	Yes	14 (26.4%)	32 (60.4%)	7 (13.2%)	0.085	9 (17.0%)	28 (52.8%)	16 (30.2%)	0.187
	No	6 (12.8%)	38 (80.9%)	3 (6.3%)		11 (23.4%)	29 (61.7%)	7 (14.9%)	

(Kruskal Wallis test)

¹⁾ Decreased=Yes ; No change/increased=No. No response is treated as a missing value.

²⁾ No response is treated as a missing value.

³⁾ No change=No ; Other responses=Yes. No response is treated as a missing value.

pharmacists' actual work than for the shorter period (less than 5 minute visits) group (Table 4).

4. Discussion

This survey was implemented in order to secure a certain amount of data on home-visit patients. The authors requested cooperation of the local pharmaceutical association to which authors belong, and received recommendation of two branches where their pharmacies are actively visiting patients' homes. We received data from the two branches at approximately the same level of collection rate, and thus we do not expect that the regional differences between the two branches will have a serious effect on the results. We also believe that this survey afforded us a general idea of the attributes of the patients who receive home visiting service from community pharmacists, and the current situation on the home visits for individual patients.

Of the pharmacy attributes used in this survey, the number of pharmacists registered as "home visitor" was the factor that showed relation with the presence of a home visiting service. This led to the confirmation that it is essential to ensure at least two pharmacists who can visit patients' homes.

Home visits of twice a month for 5 to 15 minutes of actual work time each session was the average situation for pharmacists' home visits. Elderly, living alone or with the spouse, and using multiple drugs were typical attributes of patients who received home visits. We also found that approximately 10% of these patients were suffering complications from brain infarction and dementia.

The workload involved in a pharmacist's home visit is related to the number of patients to visit, and the number of staff members. It was indicated that pharmacists whose workload for prescription filling was relatively light and who visited homes of more patients tended to provide more frequent home visits.

In the area of relation of workload and its outcomes, it was indicated that the workload indicators "visit frequency" and "actual work time" had relation with different outcome indicators. Specifically, it was implied that higher visit frequencies allowed for easier detection of signs of side effects or other adverse events and change in prescription. In addition, ensuring a certain minimum actual work time proved to be effective in resolving the unused drug issues.

A limitation of this study may be that it was difficult to closely compare workload using patients' attributes. This is because, in addition to the limitation of the number of patients, visit frequencies and actual work time were collected as categorical data instead of actual numbers. Another limitation of this study may be that the sampling cannot really be random because: (1) the visit lengths and frequencies were obtained from the pharmacists' visit records, and not from the measurements that researchers actually obtained in the field, and (2) selection of patients to be studied was left to the pharmacists. We will continue to prepare for our nationwide survey in a fashion that will enable us to obtain high-accuracy data that can survive statistical analysis by conducting detailed examination of the survey forms based on the knowledge acquired from the current study, and by carefully examining the investigation method.

5. Conclusion

This study examined the relations of the workload and its outcomes involved in the safety management and guidance on medication for community pharmacists' visits to patients' homes. The results implied that ensuring 5 or more minutes of actual work time at a patient's home resolves the unused drug issues more effectively, and ensuring the visit frequency of once a week increases the chance of detecting side effects or other adverse events arising from medication, securing safety by change in prescription. Therefore, it is imperative that the workload of the safety management and guidance on medication for home visits be properly ensured in order to alleviate patients' financial burden involved in medication and to improve the safety of drug therapy.

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