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Original research article

Use of SWOT analysis to optimize and reduce the risks of the process of administering drugs by nurses in selected departments of South Bohemian hospitals

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Abstract
Objective: Administering medication is one of the key nursing processes in hospitals. Unfortunately, there are many mistakes in drug administering that arise from human error and interfere with all activities related to drug management.
Methods: This qualitative research aimed to analyse the process of administering drugs by nurses at selected South Bohemian hospitals using SWOT analysis and SWOT risk analysis. We studied medication processes in selected South Bohemian hospitals. The research was conducted at selected inpatient departments of these hospitals (surgery, internal medicine, and aftercare department). Top management representatives and a nurse manager also attended.
Results: The analysis of the drug administration process provided the basis for creating SWOT analysis and SWOT risk analysis for selected hospitals. We identified key factors influencing the quality of the nurse drug administration process and constructed strategic recommendations for improving this process. The improvements included a transition to comprehensive electronic documentation, connection of the hospital pharmacy system with the hospital information system (HIS), increasing the number of staff members according to the situation of the hospital, higher use of clinical pharmacists, and sharing experience between hospitals. The SWOT risk analysis was also used to identify the risk areas of the studied medication processes.
Conclusions: The results of this study include an analysis of the key factors that influence the quality of the drug administration process for nurses using SWOT analysis and SWOT risk analysis. Based on the analyses, we defined recommendations for hospital management to improve and reduce the risks of this process.

Keywords: Drug administration process by a nurse; Medical error; SWOT analysis; SWOT risk analysis

Introduction

The process of administering medication is one of the key nursing processes in hospitals. The goal of a drug administration process should be to administer the right drug to the right patient in the correct dose at the right time, using the correct administration (Hughes, 2008; Williams, 2007). Many studies (Malý et al., 2009; Štrbová, 2013; Vlček et al., 2016) prove that the risks in this process include drug errors, i.e., events that are part of or lead to the inappropriate use of medicaments or damage to the patient (National Coordinating Council for Medication Errors…, 2017). The results of previously conducted studies (Berdot et al., 2012; Krähenbühl-Melcher et al., 2007) show that one-third of all drug errors leading to adverse events occur during the preparation and administration of drugs. These errors most often involve incorrect dose or incorrect administration time (Calabrese et al., 2001; Ghaleb et al., 2005). The incidence of these errors varies by the method used, the population studied, or the type of health care provided (Bertsche et al., 2008; Calabrese et al., 2001; Ghaleb et al., 2010). However, most studies (Carayon et al., 2014; Muroi et al., 2017) agree that the incidence of adverse events during drug administration is high, and therefore solutions need to be sought to improve the condition. The possibility of using risk management tools plays a key role here. Risk management in hospitals focuses on eliminating or reducing risks that have a negative impact on the health of patients, medical staff, and the entire medical facility (Prokešová et al., 2014). The ideal solution is to prevent these mistakes. For the detection and

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subsequent analysis of adverse events, it is desirable to use feedback for faulty medical staff, and then implement interventions associated with modifying the drug administration process (Lapkin et al., 2016; Mekonnen et al., 2016).

SWOT analysis is one of the strategic management and risk management instruments used to identify key factors for a given area. SWOT analysis was developed in the 1960s as a strategic evaluation instrument for gathering and organizing the information needed to evaluate the positive (strengths, opportunities) and negative (weaknesses, threats) strategic elements, as well as projects, business models, companies, or industries (Augier and Teece, 2017). If the analysis results show that the strengths and opportunities prevail, we can determine the strategic steps we want to address. These steps can help us to seize opportunities and eliminate threats and weaknesses (Domanská, 2021; Grasseová et al., 2012). For this reason, SWOT analysis can optimize the processes of organizations and highlight strategically important areas. Hospitals can use SWOT analysis to define the factors influencing the administering of drugs and reduce or eliminate risks associated with the medication process.

The goal of this article, which is based on the project "Safety of administering drugs by nurses in selected hospital wards" (registration number NU20-09-00257, supported by AZV MZ ČR), is to analyse the process of administering drugs in selected South Bohemian hospitals using SWOT analysis and SWOT risk analysis.

Materials and methods

This qualitative research was carried out between July and December 2020. We applied SWOT analysis and SWOT risk analysis to analyse the process of administering drugs by nurses in selected South Bohemian hospitals. The study was carried out by a 22-member expert team, which included the hospitals' top management representatives and nurse managers of selected inpatient departments (surgery, internal medicine, and aftercare departments). The research group received the medication processes of four selected South Bohemian hospitals, which were described in detail in the study participants' first step of the analysis.

Based on the analysis of the drug administration process, SWOT analysis and SWOT risk analysis were created for selected hospitals. These analyses helped to identify the key factors influencing the quality of the drug administration process. In the case of the SWOT analysis, the research participants identified the strengths and weaknesses of the medication process of each of the selected hospitals, as well as the opportunities and threats arising from the external environment of hospitals. These key factors were subsequently assessed by value and weight. Based on the calculated score of evaluation factors and weight, strategic recommendations for improvement were constructed. The study participants rated strengths and opportunities on a scale from 1 (lowest satisfaction) to 5 (highest satisfaction). They rated weaknesses on a scale of –1 (lowest dissatisfaction) to –5 (highest dissatisfaction). Weight was assessed for individual strengths, weaknesses, opportunities, and threats, based on the importance of individual items in the category (strengths, weaknesses, opportunities, and threats) so that the sum of weights was 1 (the higher the number, the greater the importance of the item in the category and vice versa). The resulting score of individual factors in the SWOT analysis was calculated as the product of evaluation and weight of the factor. Based on the calculated scores, strategically important factors that have an impact on streamlining and improving the medication process in selected hospitals were identified. These factors have been incorporated into the recommendations for process optimization in individual hospitals. Furthermore, we carried out synthesis of the identified factors from all performed SWOT analyses, which can generally be used to optimize and reduce the risks in the processes of drug administration.

SWOT analysis was also used to analyse risks arising from the mutual influences of internal and external environmental factors. For factors that interact, research participants determined the forces of mutual influence, whether positive or negative, on the scale of the strength of influence – small, medium, high (using the traffic light method: green = small effect, orange = medium effect, red = high effect). The results of this analysis were used to identify the risk areas of the studied medication processes and their impact on the process.

Results

The expert team compiled SWOT matrices for selected hospitals. The team included representatives of the hospitals' top management and nurse managers of selected inpatient departments (surgery, internal medicine, and aftercare departments). These matrices described the strengths and weaknesses of the internal environment (selected hospital wards, where the nurses administered drugs), and opportunities and threats affecting the studied process in the external environment. SWOT analyses were performed separately for each hospital that participated in the research.

Table 1 shows an example of SWOT drug administration processes implemented at a selected hospital.

Based on the SWOT analysis, key factors influencing the quality of the drug administration process were identified for each hospital. These key factors were subsequently evaluated. Strategic recommendations were constructed based on the calculated score of evaluation factors and weights to improve this process. An example of a SWOT analysis with an estimated score of drug administration process factors at a selected hospital is shown in Table 2.

The analysis results of the drug administration process show that in the hospital's internal environment, strengths outweigh weaknesses. In the external environment, opportunities outweigh threats, i.e., "recovery" strategies.

The proposed strategy for optimizing the drug administration process is based on the strengths (especially setting the drug administration process) and eliminating the weakest side (solution for generic drug confusion and incomplete drug prescriptions).

The best opportunity to optimize the medication process appears to be the complete electronic documentation system and linking the institutional pharmacy system with the HIS. Other options for streamlining the process include an electronic warehouse management system, a robotic drug preparation system for patients, and the introduction of barcodes for patient identification.

Threats in the process include drug outages and possible emergencies associated with a pandemic or blackout.

The most significant controllable risk of a strategic process is a combination of weaknesses and threats – a lack of support staff.

SWOT risk analysis was then used to identify the risk areas of the studied medication processes. An example of a SWOT risk analysis at a selected hospital is shown in Table 3.

Table 1. SWOT drug administration processes at a selected hospital

	Positive	**Negative/Harmful**
	Strengths	***Weaknesses***
Internal	1 Set system of drug administration	1 Group care systém of patients – large groups
	2 Electronic drug prescription	2 Manual records of changes in prescriptions
	3 Nurse-physician collaboration (treatment team)	3 Solution for generic drug confusion
	4 Patient education	4 Insufficient staffing by support staff
	5 Internal regulation settings	5 Incomplete drug prescriptions
	6 Accreditation	6 Drug dose and strength confusion
	7 Set internal audit system	7 Patient confusion
	8 Adaptation process of newly hired employees	
	9 Use of clinical pharmacists	
	10 Labelling risky drugs from a pharmacy	
	Opportunities	***Threats***
External	1 Transition to electronic documentation system	1 Drug outage
	2 Linking the institutional pharmacy system with HIS	2 Lack of support staff in the labour market
	3 Increasing the competencies of nurses	3 Pandemic
	4 Robotic drug preparation system for patients	4 Blackout
	5 Electronic warehouse management system at the department	
	6 Implementation of barcodes for patient identification	

Table 2. SWOT analysis with a calculated score of drug administration process factors at a selected hospital

Strengths	**Weight**	**Evaluation**	**Score**
Set system of drug administration	0.25	5	1.25
Legibility of drug prescriptions	0.1	5	0.5
Nurse-physician collaboration (treatment team)	0.1	4	0.4
Patient education	0.05	3	0.15
Accreditation	0.1	5	0.5
Set internal audit system	0.05	4	0.2
Adaptation process of newly hired employees	0.05	4	0.2
Use of clinical pharmacists	0.15	5	0.75
Labelling of risky drugs from a pharmacy	0.15	5	0.75
Σ	**1**		**4.7**
Weaknesses	**Weight**	**Evaluation**	**Score**
Group care systém of patients – large groups	0.1	–1	–0.1
Manual records of changes in prescriptions	0.1	–3	–0.3
Solution for generic drug confusion	0.3	–5	–1.5
Insufficient staffing by support staff (frequent substitution by a nurse)	0.1	–3	-0.3
Incomplete drug prescriptions	0.2	–5	–1
Druge dose and strength confusion	0.1	–5	–0.5
Patient confusion	0.1	–5	–0.5
Σ	**1**		**–4.2**

Table 2. ***(continued)***

Opportunities	Weight	Evaluation	Score
Transition to electronic documentation system	0.25	5	1.25
Linking the institutional pharmacy system with HIS	0.2	4	0.8
Increasing the competencies of nurses	0.15	2	0.3
Robotic drug preparation system for patients	0.15	3	0.45
Electronic warehouse management system at the department	0.15	4	0.6
Implementation of barcodes for patient identification	0.1	4	0.4
Σ	**1**		**3.8**

Threats	Weight	Evaluation	Score
Drug outage	0.2	–5	–1
Lack of support staff in the labour market	0.2	–3	–0.6
Pandemic	0.3	–3	–0.9
Blackout	0.3	–4	–1.2
Σ	**1**		**–3.7**

Internal	**0.5**
External	**0.1**
Total	**0.6**

Table 3. SWOT risk analysis of drug administration processes at a selected hospital

		Opportunities						Threats			
		Transition to electronic documentation system	Linking the intitutional pharmacy system with HIS	Increasing the competencies of nurses	Robotic drug preparation system for patients	Implementation of barcodes for patient identification	Electronic warehouse management system at the department	Drug outage	Lack of support staff in the labour market	Pandemic	Blackout
Strengths	Set system of drug administration	+	+	+	+	+	+	- - -	-	+	+
	Electronic drug prescriptions	+ + +	+ + +		+ + +		+	+		+ +	-
	Nurse-physician collaboration (treatment team)	+ +	+	+ + +				+	-	+	+
	Patient education							- -	- -	- -	+
	Accreditation	+ +	+ +		+ + +	+ +	+		-		
	Set internal audit system	+ +	+ +		+	+					
	Adaptation process of newly hired employees	+	+	+	+	+			-	- -	- -
	Use of clinical pharmacists	+ + +	+ + +	+	+ +			+ +		+	+
	Labelling risky drugs from a pharmacy						+			+	+
Weaknesses	Group care systém of patients – large groups					-			- - -	- - -	- - -
	Manual records of changes in prescriptions	+								- -	- - -
	Solution for generic drug confusion	+ +	+ +	+	+ + +		+	- - -		- - -	- - -
	Insufficient staffing by support staff					-			- - -	- - -	- - -
	Incomplete drug prescriptions	+ + +	+ + +	+	+ + +			-		- -	- -
	Drug dose and strength confusion	+ +			+				- -	- - -	- - -
	Patient confusion					+ + +			- -	- - -	- - -

Green highlight +++ the strongest positive factor influence
Yellow highlight - - medium negative factor influence
Red highlight - - - strong negative factor influence (strong mutual impairment)

Highest risks (Table 3)**:**
- Drug outage in connection to generic drug confusion, set system of drug administration, patient education
- Insufficient staffing by support staff – in connection to patient education, large patient groups, drug dose and strength confusion, and patient confusion
- Pandemic – in connection to patient education, adaptation process of newly hired employees, large groups of patients, manual records of changes in prescriptions, generic drug confusion, incomplete drug prescription, support staff, drug dose, and strength confusion and patient confusion
- Blackout – in connection to patient education, adaptation process of newly hired employees, large groups of patients, manual records of changes in prescriptions, generic drug confusion, incomplete drug prescription, support staff, drug dose and strength confusion, and patient confusion
- Group care system of patients
- Generic drug confusion
- Insufficient staffing by support staff
- Drug dose and strength confusion
- Patient confusion

Synthesising the SWOT analyses of individual hospitals enables us to specify the strengths and weaknesses of the medication process, and all the opportunities and threats associated with the drug administering processes in selected South Bohemian hospitals.

SWOT – synthesis of strengths of drug administration processes in selected hospitals
- *Set drug administration system (process)*
- Quality guidelines related to the drug administration process
- Medical records management
- Proactive risk management associated with the medication process
- Accreditation
- Internal regulations settings
- Internal audits system
- *Adaptation process of newly hired employees*
- Education of patients
- *Equipment for the implementation of the process (mobile pharmacies)*
- Electronic medicine prescription (legibility of records)
- Nurse-physician (treatment team) collaboration
- *Use of clinical pharmacists*
- System of drug sorting and transport from the hospital pharmacy to the ward
- Well-functioning co-operation with the hospital pharmacy
- Use of drug CD module to control drug interactions
- *Labelling risky drugs from the pharmacy*
- Direct responsibility (responsible person) for controlling the storage and expiration of drugs

Based on the synthesis of SWOT analyses of the scores by analysing the identified factors, most selected hospitals identified "set drug administration system (process)" as the most important strength. Higher values in the factor score were shown for the strengths "adaptation process of newly hired employees" (reported by all hospitals participating in the research). Higher values of scores and frequency of introduction appeared for the strengths "equipment for the process implementation (mobile pharmacies)", "use of clinical pharmacists", and "labelling risky drugs from the pharmacy".

SWOT – synthesis of weaknesses in the drug administration process at selected hospitals
- Group patient care system (large groups)
- Increased stress load of nurses due to workload
- Insufficient staffing by support staff
- Staff turnover within the hospital ward
- *Solution for generic drug confusion*
- Manual records of changes in surgeries (partial manual drug prescription, non-existent prescription)
- Non-linking hospital positive sheet with HIS *
- *Incomplete drug prescription*
- Dose and strength confusion
- Patient confusion
- Non-association of medication with diet
- Failure to adjust the system of medication intake during hospitalization
- Impossibility of keeping to the exact administration time according to the prescription (for operational reasons)
- *Insufficient reporting of adverse events*
- Failure to use the services of a clinical pharmacist from a hospital pharmacy

* Hospital information system

Areas with significant weaknesses (these had the highest scores and frequency in the examined hospitals) were "solution for generic drug confusion", and "incomplete drug prescription". The "insufficient reporting of adverse events" also showed a high score.

SWOT – synthesis of opportunities for the drug administration process in selected hospitals
- *Transition to a complete electronic documentation system*
- *Connection of the hospital pharmacy system with HIS*
- Robotic drug preparation system for patients
- Electronic warehouse management system at the department
- Introduction of barcodes to identify the patient
- *Increasing the number of staff*
- *Greater use of clinical pharmacists*
- Increasing the competence of nurses within the medication process
- *Sharing experiences between hospitals*
- *External quality assessment – accreditation*

SWOT analyses synthesis showed that the participating hospitals saw the opportunity to improve the drug administration process with the highest score as the most important. These included "transition to a complete electronic documentation system", "the connection of the hospital pharmacy system with HIS", "increasing the number of staff", and "greater use of clinical pharmacists". All of these proved to be significant opportunities with an impact on the strategy. A high score, i.e., a significant opportunity to improve the process in one of the hospitals, was also recorded for "external quality assessment – accreditation" and "sharing experience between hospitals".

SWOT – synthesis of threats in relation to the process of drug administration in selected hospitals
- *Drug supply outages*
- *Lack of nurses in the labour market*
- Lack of support staff in the labour market
- Staff turnover
- Non-updated competencies of nurses concerning generic prescriptions

- Nursing education settings
- *The issue of similarity of drug packaging*
- *The issue of similarity of drug names*
- *Pandemic*
- *Blackout*

In the case of threats, SWOT synthesis pointed out "drug supply outages" and "lack of nurses in the labour market", both in terms of score and frequency. The threats "issues of similarity of drug packages", "issues of similarity of drug names", "pandemic" and "blackout" are perceived as significant threats with a high score for the drug administration process.

From the score of identified strengths, weaknesses, opportunities, threats and their weight, it is possible to define strategic recommendations leading to the streamlining of this process in selected hospitals. Based on the results of the research, the following strategic goals can be proposed to all participating hospitals, which would lead to the improvement of the drug administration process:

1. Transition to a complete electronic documentation system
2. Connection of the hospital pharmacy system with HIS
3. Increasing the number of staff according to the situation of the hospital
4. Higher use of clinical pharmacists
5. Sharing experiences between hospitals

The fulfilment of these goals depends on the specific situation of individual hospitals, limited opportunities to recruit staff in the labour market, financial demands, and other limitations. However, in the future, this could be a visible shift that leads to an improved nursing process and, thus, improved patient services and reduced risks that are associated with these services.

Discussion

SWOT analysis is generally based on the conflict of the internal environment (strengths and weaknesses) and the external environment (opportunities or threats). It helps to identify strategic options (Johnson and Scholes, 2002). The performed SWOT analyses in selected hospitals showed several factors that can positively influence the drug administration process, especially in quality, efficiency, and risks. Nurses undoubtedly play a crucial role in preventing errors in drug administration processes (Cleary-Holdforth and Leufer, 2013; Miller et al., 2016).

Strengths identified based on SWOT analyses carried out in selected South Bohemian hospitals included: "set drug administration system (process)", "quality guidelines related to the drug administration process", "medical records management", "internal regulations settings", "proactive risk management associated with the medication process", "education of patients", "equipment for the process implementation (mobile pharmacies)", and "accreditation". Research by Greenfield and Braithwaite (2008) raised concerns that accreditation could merely lead to organizational changes in standardization and decision-making processes, rather than a real improvement in the quality of care. The research shows a positive effect of accreditation on the quality of care in hospitals (Ng et al., 2013), so we can assume that hospital accreditation is a strength with influence in the medication process. Other strengths included factors related to the involvement of pharmacists and hospital pharmacies in the medication process, namely "use of clinical pharmacists", "system for drug sorting and transport from the hospital pharmacy to the ward", "well-functioning co-operation with the hospital pharmacy", "use of drug CD module to control drug interactions", and "labelling risky drugs from the pharmacy". The fact that the pharmacist plays a vital role in preventing medication errors and other costs to the health care system has been shown by several pieces of research (Alomi et al., 2019a, b). The development of clinical pharmacy as an advanced clinical discipline will help physicians support rational drug prescriptions and also help patients to use them. It will lead to increased drug efficacy and safety (Rao et al., 2016). A positive finding is that the factor "direct responsibility (responsible person) for controlling the storage and expiration of drugs" ranks among the strengths of selected South Bohemian hospitals. This is important because Abdelrasheed et al. (2020) found that the most cumulative and common medication errors of the highest severity are difficulties in dealing with and storing high-alert drugs. The "internal audits system" has also proven to be a strength of the medication process in South Bohemian hospitals, and several studies have confirmed that it improves both the quality of this process and its safety (Hanskamp-Sebregts et al., 2013). Another identified strength of the medication process, and also a crucial factor in determining patient safety and quality of care (Amudha et al., 2018), is the "nurse-physician (treatment team) collaboration". "Electronic medicine prescription (legibility of records)" is among the strengths that lead to the reduction of errors, especially medication ones (drug dose adjustment, dose range control, therapeutic duplication controls, drug allergy controls, drug interactions and more), and, thus, increase the overall quality of health care. "Adaptation process of newly hired employees" is also among the influential strengths. Its length and intensity depend on the setting of the process and how well the nurses are prepared for their role (Powers et al., 2019).

Some of the revealed weaknesses related to ensuring sufficient staff, in factors such as "group patient care system (large groups)", "increased stress load of nurses due to workload", "insufficient staffing by support staff", and "staff turnover within the hospital ward". Such problems also appear in the results of other studies (Ehsani et al., 2013; Ersun et al., 2013; Hassan et al., 2009; Tang et al., 2007; Young et al., 2008). The authors reported that medication errors were primarily caused by a lack of medical staff and pharmacological information, and that the reporting rate of medication errors was lower than the actual number. Weaknesses included organisations' refusal to change, increased workload, insufficient awareness of continuous quality improvement, inadequate training of employees and lack of constant quality improvement support (Ng et al., 2013).

The lack of pharmacological information is related to other identified weaknesses, namely "manual records of changes in surgeries (partial manual drug prescription, non-existent prescription", "non-linking hospital positive sheet with HIS", and "incomplete drug prescription". Significant weaknesses include the "insufficient reporting of adverse events" in the medication process, which has been the subject of several studies (Alsulami et al., 2013; Billstein-Leber et al., 2018; Conners et al., 2017; ISMP Medication…, 2017; Khoja et al., 2011).

According to Cohen et al. (2005), implementing a carefully planned series of low-cost interventions for high-risk medications (based on information mainly from internal incident reports aimed at improving the safety of medicines in hospitals) leads to a significant reduction in patient harm. Other weaknesses included: "solution for generic drug confusion", "dose and strength confusion", "patient confusion", "non-associa-

tion of medication with diet", "failure to adjust the system of medication intake during hospitalization", and "impossibility of keeping the exact administration time according to the prescription (for operational reasons)". These problems have been reported in other studies that suggest that during the prescribing, dispensing, and administration phases (Whitehair et al., 2014), medication errors may include omission or confusion of medications, route, doses, patients, times (Latimer et al., 2011; Roughead et al., 2013). The National Coordinating Council for Medication Errors (2017) describes a treatment error as a preventable event that can cause drug misuse or injury to patients when the drug is owned by the healthcare provider, the patient, or the user. Such incidents could be related to professional practices, protocols, care products, and systems such as medication prescribing, labelling, order communication, nomenclature on packaging, dispensing, administration, distribution, use, and education (Walsh and Antony, 2009). Medication errors could also be addressed by removing the weakness "failure to use the services of a clinical pharmacist from a hospital pharmacy".

The SWOT analyses showed that hospitals see opportunities in streamlining and improving drug administration in new technologies. These are "connection of the hospital pharmacy system with HIS", "robotic drug preparation system for patients", "electronic warehouse management system at the department", or "introduction of barcodes to identify the patient". Due to the complexity of unique pharmacy workflows, technology implementations are often individualized for each institution (Boyd and Chaffee, 2019). Other types of opportunities are related to human resource management. In particular, we speak about an increase in staff regarding the implementation of the drug administration process, "greater use of clinical pharmacists" and "increasing the competence of nurses within the medication process". Other opportunities to optimize the medication process are "sharing experiences between hospitals" and "external quality assessment – accreditation". The research of Garcia et al., (2017), Grimes et al., (2011) and Hammad et al., (2014), clearly shows the need to improve the quality of treatment information hospitals achieve by the "transition to a complete electronic documentation". Such systems can increase the prescription legibility, completeness, and accuracy of the information on medicines.

In addition to the general threats arising from the labour market, such as "lack of nurses in the labour market", "lack of support staff in the labour market" or "staff turnover", "outages" have also emerged as a significant threat. These are caused mainly by insufficient information on the number of drugs on the market, which is a result of budgetary pressures on pharmacy purchasing managers who focus on optimising business and reducing drug inventory costs (Gebhart, 2000). Several scientific studies (Berman, 2004; Lambert et al., 2001; WHO, 2007) deal with the issue of LASA (LASA = Look-Alike/Sound-Alike Drugs), i.e., the similarity between medication packages and names. Incorrectly chosen medication and unintentional drug administration due to similar-sounding names or similar-looking packaging have the potential to cause medication errors, even if they are being administered by experienced health care professionals. In relation to the identified threat "nursing education settings" and "non-updated nursing competencies concerning generic prescriptions", several studies suggest that many nursing higher education curricula do not sufficiently educate students about factors contributing to treatment errors and the possible strategies to prevent them (Ardizzone et al., 2009; Cleary-Holdforth and Leufer, 2013).

Latimer et al. (2017) deal with teaching strategies that increase students' awareness of situations causing errors in treatment and their prevention. In the analysis, emergencies that include hospitals such as "blackout" or "pandemic" emerged among the threats. Each hospital is prepared differently for such threats, because all hospitals should be ready for a power outage or other extraordinary event (Hromada and Lukáš, 2012).

Conclusions

This study offers analysis of crucial factors influencing the quality of drug administration process in selected South Bohemian hospitals at a strategic level, using SWOT analysis and SWOT risk analysis. The implemented SWOT analyses of most hospitals proved that the following factors are significant strengths (based on the score value) that positively influence the drug administration process: "set system (process) of drug administration", "adaptation process of newly hired employees", "equipment for the process implementation (mobile pharmacies)", "use of clinical pharmacists", and "labelling risky drugs from the pharmacy". On the other hand, "solution for generic drug confusion", "incomplete drug prescription", and "insufficient reporting of adverse events" were identified as strategically essential weaknesses with a negative impact on this process. These need to be eliminated or at least reduced in the hospitals. Significant opportunities to optimize and reduce the risk in these hospitals include "transition to a complete electronic documentation system", "the connection of the hospital pharmacy information system with HIS", "increasing the number of staff", and "greater use of clinical pharmacists". Significant threats that are reflected in increased risks and need to be prepared for are directly related to the drug administration process such as "drug supply outages", "the issue of similarity of drug packaging", or "the issue of similarity of drug names", and general threats such as "lack of nurses", "blackout", and "pandemic". Based on the results of the analyses, we can recommend several changes to hospitals. These will lead to optimization and risk reduction of the drug administration process. We especially recommend the transition to a comprehensive system of electronic documentation, the connection of the hospital pharmacy information system with the HIS, increasing the number of staff according to the hospital's situation, higher use of clinical pharmacists, and sharing experiences between hospitals.

Ethical aspects and conflict of interests

The authors have no conflict of interests to declare.

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Využití SWOT analýzy na optimalizaci a snížení rizik procesu podávání léků sestrou na vybraných odděleních jihočeských nemocnic

Souhrn

Úvod: Proces podávání léků sestrou patří v nemocnicích mezi klíčové ošetřovatelské procesy. Tento proces je bohužel zatížen lékovými pochybeními, která vznikají na základě lidských omylů a zasahují tak do všech činností souvisejících se zacházením s léčivy.
Metody: Cílem tohoto příspěvku bylo analyzovat proces podávání léků sestrou u vybraných jihočeských nemocnic s využitím SWOT analýzy a SWOT analýzy rizik. Výzkum kvalitativní povahy spočíval v aplikaci SWOT analýzy a SWOT analýzy rizik při analyzování procesu podávání léků sestrou ve vybraných jihočeských nemocnicích. Výzkumný soubor tvořily medikační procesy vybraných jihočeských nemocnic. Výzkumu se účastnili zástupci vrcholového managementu nemocnic a sestry manažerky vybraných lůžkových oddělení těchto nemocnic, na kterých byl výzkum realizován (chirurgie, interní oddělení a oddělení následné péče).
Výsledek: Na základě analýzy procesu podávání léků sestrou byly pro vybrané nemocnice vytvořeny SWOT analýzy a SWOT analýzy rizik, ve kterých byly identifikovány klíčové faktory ovlivňující kvalitu procesu podávání léků sestrou a konstruována strategická doporučení na zkvalitnění tohoto procesu, a to zejména přechod na komplexní systém el. dokumentace, propojení systému nemocniční lékárny s nemocničním informačním systémem (dále jen NIS), navýšení počtu personálu podle situace dané nemocnice, vyšší míra využití klinických farmaceutů a sdílení zkušeností mezi nemocnicemi. SWOT analýza rizik pak byla využita také k identifikaci rizikových oblastí zkoumaných medikačních procesů.
Závěr: Výsledky této studie nabízejí analýzu klíčových faktorů ovlivňujících kvalitu procesu podávání léků pro sestry na strategické úrovni pomocí SWOT analýzy včetně SWOT analýzy rizik těchto procesů. Na základě realizovaných analýz byla definována doporučení pro management nemocnic ke zkvalitnění a snížení rizikovosti tohoto procesu.

Klíčová slova: medikační pochybení; proces podávání léků sestrou; SWOT analýza; SWOT analýza rizik

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