

RESEARCH ARTICLE

Understanding the Complexities of Drug Transactional Interaction Between the Patient and Pharmacist: A Scoping Review

Md. Shahgahan Miah^{1,2}, Penchan Pradubmook Sherer¹, Nithima Sumpradit³, and Luechai Sringernyuang^{1*}

¹ Mahidol University, Salaya, Thailand

² Shahjalal University of Science and Technology, Sylhet, Bangladesh

³ Ministry of Public Health, Bangkok, Thailand

*luechai.sri@mahidol.ac.th

Abstract: Drug transaction interaction is a complex global phenomenon in terms of drug safety, quality, and rational use. Non-participatory interactions concerning drugs might lead to adverse effects, as well as loss of resources, time, and money. The complexities of drug transactional interactions in developing countries, especially in the Asian context, are understudied. Therefore, this scoping review aimed to map the scientific evidence that explored the patient–pharmacist interaction patterns for primary health care in relation to drug transactional complexities in pharmacy care settings. For this purpose, we adopted the methodological framework by Arksey and O’Malley (2005). The PubMed, Science Direct, EBSCO discovery services, AnthroSource Online database, cross reference, and manual searches were used to select relevant articles (29). The results revealed that the majority of studies had been conducted from a profession-centric point of view, such as in pharmacy, medicine, and public health, but little has been studied from a social science standpoint. The selected studies were divided into those from developed and developing countries based on their location. Accordingly, studies in developed countries have focused on ensuring participatory, collaborative, and patient-centric interactions. In contrast, researchers in developing countries have struggled to identify and recognize the role of pharmacists, drug dispensing patterns, and ways to operate pharmacy care. Thus, this scoping review synthesis can contribute to policy formulation and implementation to boost the access to safe medicines, as well as reduce medication errors and identify research gaps for future research projection.

Keywords: patient, pharmacist, interaction, communication, transaction, drug

Availability and usage of medicines have become major health concerns in terms of rational use, quality, safety, and price. Evidence shows that every year, US\$42 billion is spent globally on medicines used incorrectly (Aitken & Gorokhovich, 2012). In addition, the World Health Organization (WHO) reported that,

worldwide, a total of US\$6.9 trillion was spent on health in 2011, with 20%–40% of the amount wasted because of the inappropriate use of drugs (WHO, 2014). Overall, 50% of the global people use drugs incorrectly from prescription, dispensed, sold, and even fail intake exactly (Sabaté, 2003). The inappropriate

use of drugs results in increased healthcare costs, loss of time and resources, and, most importantly, adverse health effects (Saha & Hossain, 2017) when the drug is transacted inaptly for primary health care in the pharmacy care settings. Consequently, a total of 100 million people in the world (65 million people in the South-East Asian region) are driven to poverty every year because of high healthcare costs from their own pocket (OOP), especially those pertaining to medicines (WHO, 2014).

Every year, a significant number of patients are harmed or die because of unsafe health practices, resulting in a high public health burden worldwide. Specifically, the adverse events were identified as the 14th leading cause of global morbidity and mortality, and up to 4 out of 10 patients were harmed in primary or ambulatory care settings (WHO, 2019). The volume of the adverse events of drug use varied between developed, developing, and low- and middle-income countries (LMICs). Evidence suggests that there are 134 million adverse events that occur each year due to unsafe care, which contributes to 2.6 million deaths annually in LMICs (WHO, 2019). In relation to healthcare expenditures, people in high-income countries spent only 5% (average/capita/US\$) on medicines, whereas the percentage was more than double in middle-income (12%) and low-income countries (13.7%; WHO, 2019). To overcome this global burden of irrational drug use, the WHO declared the third global patient safety challenge to reduce the level of severe, preventable harm related to medications by 50% over a period of five years (Donaldson et al., 2017; WHO, 2017).

According to Wiedenmayer (2000), to improve the quality, safety, and rational use of medicines, participatory, interactive, and problem-based interventions have been established as the most operative interventions that might enhance the benefits of good health. Consequently, shared pharmacist–patient communication has already been identified as an important dimension for delivering patient counseling, providing information on medications, teaching medication use, patient management, improved medication adherence, and patient outcomes in primary health care (de Kok et al., 2018; Murad et al., 2017; Nakayama et al., 2016; Shah & Chewning, 2006; Waring et al., 2016). The collaborative and effective patient–pharmacist interaction can be subjective in saving time to visit doctors, reducing health care

costs and medical bills, and lowering hospitalization (Azhar et al., 2009; Sakeena et al., 2018). By ensuring that pharmacist–patient shared interactions in drug decision, consumption, and efficacy processes, developing countries might contribute to minimizing drug harm and irrational uses, as well as benefit from improving primary health care, like in developed countries.

Unlike developed countries, most developing nations struggle to recognize the pharmacist’s role and utilization of pharmacy care (Azhar et al., 2009; Khan et al., 2013; Sakeena et al., 2018). In addition, the possible barriers of pharmacist–patient interaction for primary health care at the community pharmacy were identified as pharmacist-led interactions and disregarding the patient’s expectations, negotiation, socio-cultural beliefs, and economic context (Wiedenmayer et al., 2006). Much of the contemporary studies on pharmacist–patient communication (Chong et al., 2014; de Kok et al., 2018; Murad et al., 2017; Nakayama et al., 2016; Nusair & Guirguis, 2018) focused on the context of developed countries and providers or profession-centric (pharmacy) points of view to measure communication or interactions, drug use patterns, and rational usage. In contrast, the patient–pharmacist interaction from a patient’s point of view has been little studied, although patients have their own rationale for consuming medicines, which might be considered irrational from a pharmaceutical or medical point of view (Wiedenmayer, 2000). The nature of health concerns, availability of drugs, health services, and drug behaviors might be culturally specific, locally defined, as well as socially, economically, and politically contextualized. Moreover, in developing countries, pharmacies are often the first point of contact when seeking health care. Moreover, there is a diverse range of service providers at pharmacies, including trained, semi-trained, and untrained personnel. Considering the complex scenario of drug transaction patterns, the aim of this scoping review is to map the scientific evidence that explores the patient–pharmacists’ drug transactional interactions and the influencing factors of drug transactions.

Methods

We adopted the scoping review methodological framework because of its flexible search terms in

a comprehensive way, irrespective of study design (Arksey & O'Malley, 2005) because this scoping review method focuses to systematically search, select, and synthesize the available evidence in a given topic. In addition, it also includes flexible search terms, and the studies are designed either qualitative, quantitative, mixed-method, or reviewed. We identify, select, and synthesize all relevant published research evidence to understand the complexities of drug transaction interactions between the patient and pharmacists with a potential scientific research gap and direction for future research projections (Colquhoun et al., 2014).

Search Strategy

Medline through PubMed, Science Direct, EBSCO discovery services, and AnthroSource online databases were searched using the key concepts of patient–pharmacist interaction. In addition, most of the cross-references searched to identify other relevant important evidence were cross-checked until reaching the saturation level where no new concepts and dimensions were found (Arksey & O'Malley, 2005). The search was limited to articles published in English only. The time span for the search in the electronic databases was set from January 2000 to July 2020. In addition, in complementary and manual searches, most of the social sciences studies on patient–pharmacist

interaction and communication were conducted from 1980 to 2000. The keywords presented in Table 1 were used to identify the appropriate research literature for the advanced search, along with the Boolean operator “AND” in between columns and “OR” used within columns.

Study Selection

Search strategies included a total of 6,870 articles, of which 5,616 were identified as duplicates (2,113) and irrelevant (3,503). To include the appropriate and eliminate irrelevant research articles, we set the inclusion and exclusion criteria shown in Table 2, guided by the research aims to ensure consistency (Arksey & O'Malley, 2005). Many articles were selected based on key concepts only. In addition, the selected articles were compared and contrasted to establish the argument and identify the gaps by synthesizing the results relating to the context of developing countries. Empirical studies and review articles were included as selection criteria.

The retrieved data were reviewed abstracts, keywords, journals, and authors' details to categorize the searched articles. The search strategy was divided into two sets. First, the studies related to pharmacist–patient interaction categorize the current

Table 1

Search Strategy for Internet Database

	AND			
OR	Pharmacist, Drug seller, Providers	Patient, Client, Recipient	Interaction, Communication, Consultation	Primary healthcare, healthcare roles, medicines, drug distribution

Table 2

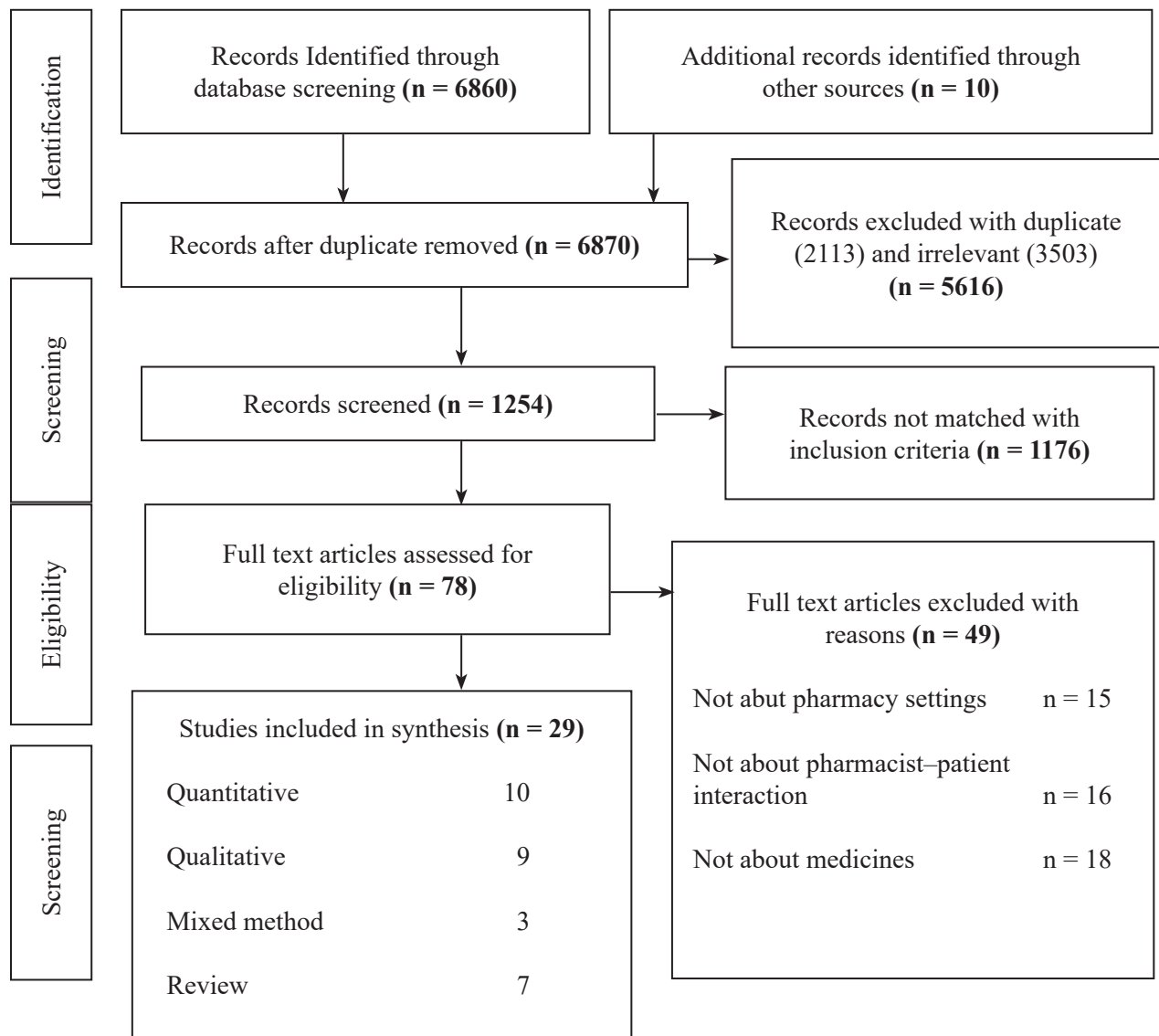
Inclusion and Exclusion Criteria of Research Article Selection

Description	Inclusion	Exclusion
Population	Pharmacist, Drug seller, Patient, Client	Physicians/Community physicians/ Doctor, Traditional healer, Nurse, and Medical representative
Settings	Pharmacy, community pharmacy	Hospital, clinics, Home settings
Key concept	Interaction, Communication, Pharmacist role, patient-centered	Counselling, Drug Promotion, Drug Compliance, Adherence, Communication skills/training, Patient education
Drug Use	Primary care	Addictive, Alcohol, Contraceptive, Illegal, Substance, Injecting

knowledge and practices of patient–pharmacist interaction. Second, studies focused on social sciences, especially sociological and anthropological studies on pharmacist–patient interaction, searched in the AnthroSource database by applying the same keywords. Two independent review authors (S.M. and L.S.) conducted the entire screening process. The inclusion and exclusion criteria were charted as guidelines for this scoping study.

Interrelationship of the Inclusion and Exclusion Criteria

The keyword-highlighted inclusion and exclusion criteria show an interrelationship. The population included pharmacists and patients who were addressed in developed countries, whereas drug sellers, clients, or customers could have originated from both developing or less developed countries. The pharmacist–physicians, doctor–patient, doctor–medical representative, and nurse–patient interactions



Note: PRISMA chart adopted from Colquhoun et al. (2014).

Figure 1. Literature Search and Selection Process Using PRISMA Flow Diagram

articles were considered as excluded. For the settings, pharmacy or community pharmacy was included, whereas hospital, clinic, and home settings were left out. In addition, the incorporated key concepts were interaction, communication, pharmacist role, and patient-centered, whereas counseling, drug promotion, drug compliance, adherence, communication skills or training, and patient education were considered for elimination. Furthermore, only drugs for primary care purposes were included, whereas addictive, alcoholic, contraceptive, and illegal substances as well as injecting drug use were excluded.

Data Extraction

The bibliographic software package Endnote X8 was used to manage the reference, cross-check, and remove duplicity. The team members reached a consensus to determine the eligibility criteria. Prior to finalizing the data extraction chart, articles were reviewed to identify the potential concepts and codes in a continuous process to ensure consistency with scoping purpose and research aims. Two independent reviewers (S.M. and L.S.) extracted the data (Table 3) from selected articles, including authors' first name, year of publication, location, study aim, design, population, sample size, data collection tools, theory, and important findings. The results were categorized into themes and sub-themes of drug transactional interaction, communication patterns, and influencing factors of drug transaction interactions.

Charting the Data

Charting the data identified as important items with significant evidence followed key issues and themes (Arksey & O'Malley, 2005). Selected research articles were reviewed using the "descriptive analytical" method (Arksey & O'Malley, 2005) to maximize the use of data. Data were input into the charting form using a Microsoft Excel file compiling the study characteristics (author, publication year, location, settings, population), aims of the study, and methodology.

Data Collating, Summarizing, and Reporting

Charted data were analyzed and summarized under different codes and themes, followed by the research questions. In addition, data were numerically analyzed in a descriptive manner to understand the nature and extent of each selected study. Subsequently, they were

transformed into an analytic framework using the narrative account of the selected research literature (Colquhoun et al., 2014). Later, data were analyzed manually under several codes, sub-codes, and themes in each study.

Results

The search results generated a total of 6,860 articles from the Internet database. Ten articles were selected through a complementary search. Then, they were checked for duplicates and relevancy after reading the titles of the 5,616 articles eliminated by the Endnote software. Next, 78 of them were carefully selected for a full-text review after screening the title and abstract, which excluded 1,176 manuscripts. During the review process of the full text, 49 studies had to be eliminated due to the interaction settings of the study (e.g., hospital, clinic, home) and drug use patterns as part of the iterative process (Colquhoun et al., 2014). After reading the full article focusing on the abstract, subjects, methodology, findings, and conclusion, 29 articles were included in the review. It is noteworthy that frequent discussions were continued with the other reviewers (L.S., P.S., and N.P.) regarding research ideas, research questions, searching processes, strategies, and the inclusion and exclusion criteria.

Characteristics of Reviewed Articles

Most studies (22, 75.8%) were conducted over the past 10 years. The countries with the highest number of studies (16, 55.1%) were developed countries. Only nine (31.0%) studies were conducted in developing countries. Among these studies, only three quantitative studies—followed convenience (Chua et al., 2013), quota sampling (Fang et al., 2011), and random sampling method (Saha & Hossain, 2017)—were utilized. In contrast, one qualitative (Seeberg, 2012) study adopted a random sampling strategy. One qualitative study used a large population-based selection method (Kamat & Nichter, 1998). Notably, none of the quantitative studies applied a theoretical lens. In contrast, six of the qualitative studies adopted various theoretical or conceptual models, including critical interpretive synthesis (Pisani et al., 2019), actor network theory (Seeberg, 2012), face-work theory (Murad et al., 2017), Foucauldian power

Table 3*Summary of the Key Characteristics of the Reviewed Articles*

Study No.	Author*/ Year/ Location	Aim of Study	Study Design	Population/ Sample Size (n)	Data collection tools	Theory/ model
1	Greenhill 2011 U.K.	To explore communication between pharmacists and patients through the application of the Calgary-Cambridge	Qualitative	Patients n=18 Pharmacist n= 5	SSI guideline Audio recorder Observation	Calgary- Cambridge guide on communication
2	Murad 2017 Canada	To determine face needs, threats, and the strategic communication strategies used to address within community pharmacist-patient interactions.	Exploratory descriptive	Pharmacist Male n=8 Female n= 17	Audio recorded interaction	Face-work theory
3	Patton 2018 Canada	To identify how providers and clients interpret and operationalize medication reviews within everyday community pharmacy practice	Ethnographic study	Pharmacies chain (3) independent (1) Provider Client	Ethnographic interviews SSI Medication review Fieldnotes	Not mentioned
4	Waring 2016 U.K.	To develop an in-depth ethnographic understanding of the situated practices, cultural context, and organizational field within which the NMS was implemented	Qualitative	Patients n= 19 Pharmacist n= 27	Observation SSI	Foucauldian power
5	Kamat & Nichter 1998 India	To explore the way of operating pharmacy and pharmacy managers perceptions on medicines promotion and laypeople	Ethnographic study	Pharmacist N=75 Customer n=150 MR n=35	SSI IDI Exit interview Participant observation	Not mentioned
6	Sunpuwan 2019 Thailand	To understand access to and use of Yaa Chud at the community level in order to raise awareness of its usage and to provide policy recommendations to address the problem	Qualitative	Population n=49 Drug supplier Community member	IDI Focus group Discussion (FGD) Standard set of questions	The behavioral model of healthcare utilization
7	Vuckovi& Nichter 1997 U.S.A. & Asia	How medication-related practice is affected by social, cultural, and political-economic factors	Ethnographic research 18 months	40 HH Pharmacist Physicians Consumer	IIDs Observation	Not mentioned
8	Seeberg 2012 India	To explores the impact of intensive competition within the pharmaceutical industry and among private providers on health care.	Ethnographic study 18 months 2004-2006	Random Sampling N=200 Practitioner n=20 Patients	Household survey IDI FGD Key informant Interview (KII) Observation	Actor network theory

Table 3 continue...

Study No.	Author*/ Year/ Location	Aim of Study	Study Design	Population/ Sample Size (n)	Data collection tools	Theory/ model
9	Pisani 2019 China, Turkey Indonesia Romania	Aimed to identify specific mechanisms through political, economic, and other systemic factors that influence the availability of substandard and falsified medicines and vaccines, and the ways in which they enable or obstruct policies aimed at reducing the production, trade, and consumption	Qualitative Both primary and secondary data	Regulator, policymaker, Manufacturer, Physicians Pharmacist Patient Academics	SSI Review articles Deductive approach Grounded theory approach	Critical interpretive synthesis
10	Nakayama 2016 Japan	To identify the characteristics of and problems with routine communications between pharmacists and patients	Quantitative 32 interaction	Pharmacist Male n=14 Female n= 43	Roter method of interaction process analysis system (RIAS) Open- and close-ended question	Not mentioned
11	Chong 2014 Australia	The purpose was to learn about the communication process in the community pharmacy settings in a mental health context	Quantitative Pharmacies n=15	Pharmacist n=20 Simulated patient n= 3	RIAS Simulated patient method	Not mentioned
12	Chua 2013 Malaysia	To assess how the general public utilized community pharmacies	Quantitative Pharmacies n=10	Convincing sampling n=1914 Pharmacist Customers	Structured data collection form	Not mentioned
13	Fang 2011 China	To explore the perceptions about the concept of pharmaceutical care, frequencies of pharmaceutical activities, and barriers to implementation of pharmaceutical care	Cross-sectional Inde. shop n= 29 Chain shop n=64 Supermarket n=8	Quota sample n=101 Female n=83 Male n=18	Self-completion questionnaire	Not mentioned
14	Kloos 1988 Ethiopia	To explore the drug behavior and drug retailer use in drug selection and purchasing	Quantitative	n=1775 Client Pharmacist	Survey Questionnaire Unstructured interview Observation	Not mentioned
15	Hendrickson 2016 Zambia	Examine the pharmacist's knowledge, behavior, and sales practices in abortion drugs	Descriptive cross-sectional design	Pharmacies n=176 Mystery client n=4	Survey	Not mentioned
16	Khan 2013 Pakistan	To evaluate patients' perception of pharmacists and pharmacy practice in Pakistan.	Cross-sectional study	Convenient Sample Patient n=301	Questionnaire	Not mentioned
17	Al Hussaini 2018 Kuwait	To explore the knowledge, perception, and experiences toward generic drug substitution practices	Descriptive cross-sectional design	Sample Pharmacist n=180	Survey	Not mentioned

Study No.	Author*/ Year/ Location	Aim of Study	Study Design	Population/ Sample Size (n)	Data collection tools	Theory/ model
18	Saha & Hossain, 2017 Bangladesh	To investigate medicine dispensing patterns of the pharmacies and to identify and analyze the contribution of drug sellers and quacks in irrational drug use	Quantitative Cross-sectional design	Pharmacies n=63	Structured questionnaire	Not mentioned
19	Rakib 2015 Bangladesh	To find out the role of community pharmacists in Bangladesh	Quantitative	Pharmacist n=50	Survey	Not mentioned
20	Nusair 2018 Canada	How pharmacists gathered information and evaluated medication appropriateness using the Patient Care Process in a community pharmacy	Mixed method	Pharmacist n=17	Video recorder Quantitative codebook Qualitative approach	Not mentioned
21	Ahmed 2017 Bangladesh	To investigate how the drug shops currently operate vis-a-vis the regulatory regime, including dispensing practices of the salespersons	Mixed method	Drug Shop (rural 90, urban 21) Patients Admin. personnel Seller	Survey Observation FGD KII	Not mentioned
22	Logan 1988 Mexico	Explore the role of pharmacists, self-diagnosis and self-medication with OTCs	Mixed method	Randomly n=48 Women Pharmacist	Survey questionnaire KII Observation	Not mentioned
23	Shah & Chewning 2006 USA	Examine and summarize how researchers have conceptualized, defined, and measured pharmacist-patient communication across studies and identify gaps in the literature	Systematic review 1980-2004	Pharmacist Patients	4 database 39 studies	Not mentioned
24	Kok 2018 United States	How effective adherence support delivering focusing on patient-centeredness and shared decision making in HIV care	Interpretive review	Provider Client	Not mentioned	Not mentioned
25	Mesquita 2010 Brazil	To review the literature relating to the use of simulated patient methods to enhance the communication skills of pharmacists	Systematic review 1980 to 2008	15 studies were included for analysis	Not mentioned	Not mentioned
26	Sakeena 2018 Developing countries	To investigate the role of pharmacists in the appropriate use of antibiotics and to identify how the pharmacists' role can be enhanced to combat AMR in developing countries	Narrative review	Pharmacist Patient	Not mentioned	Not mentioned
27	Cavacoa 2010 Portugal	To explore the utility of the RIAS for analysis of pharmacist-patient interaction and its implication for improving patient care and optimizing pharmacy-specific outcomes	Review	Patients with diabetic cases	Not mentioned	Not mentioned
28	Azhar 2009 Pakistan	The role of a pharmacist in developing countries like Pakistan	Review literature	Not mentioned	Not mentioned	Not mentioned
29	Geest 1983 Developing countries	No information	No information	No information	No information	No information

Note. *Only first author mentioned in author column, SSI=Semi structured interview, In-depth interview=IDI, Focus group discussion=FGD

Table 4*Characteristics of Reviewed Studies*

Characteristics	Quantitative N= 10 (%)	Qualitative N= 9 (%)	Mixed Method N= 3 (%)	Reviewed N= 7 (%)	Total N= 29 (%)
Publication year					
1980-1989	1 (3.4%)	—	1 (3.4%)	1 (3.4%)	3 (10.3%)
1990-1999	—	2 (6.8%)	—	—	2 (6.8%)
2000-2009	—	—	—	2 (6.8%)	2 (6.8%)
2010-2020	9 (31.0%)	7 (24.6%)	2 (6.8%)	4 (13.7%)	22 (75.8%)
Country*					
Developed	5 (17.2%)	6 (20.6%)	2 (6.8%)	3 (10.3%)	16 (55.1%)
Developing	3 (10.3%)	2 (6.8%)	1 (3.4%)	3 (10.3%)	9 (31.0%)
Less Developed	2 (6.8%)	—	—	—	2 (6.8%)
Multi-country	—	1 (3.4%)	—	—	1 (3.4%)
No country	—	—	—	1 (3.4%)	1 (3.4%)
Sample Method					
Convenience	1 (3.4%)	1 (3.4%)	—	—	2 (6.8%)
Quota	1 (3.4%)	—	—	—	1 (3.4%)
Randomly	1 (3.4%)	1 (3.4%)	—	—	2 (6.8%)
Large population-based	—	1 (3.4%)	—	—	1 (3.4%)
Not mentioned	8 (27.5%)	6 (20.6%)	2 (6.8%)	7 (24.6%)	23 (79.3%)
Theory/Model					
Focauldian Power	—	1 (3.4%)	—	—	1 (3.4%)
Actor Network Analysis	—	1 (3.4%)	—	—	1 (3.4%)
Face-work Theory	—	1 (3.4%)	—	—	1 (3.4%)
Critical Interpretive Synthesis	—	1 (3.4%)	—	—	1 (3.4%)
Calgary-Cambridge Guide	—	1 (3.4%)	—	—	1 (3.4%)
Behavioral Model of Healthcare Utilization	—	1 (3.4%)	—	—	1 (3.4%)
Transmission and Transaction	—	—	—	1 (3.4%)	1 (3.4%)
Not mentioned	10 (34.4%)	3 (10.3%)	3 (10.3%)	6 (20.6%)	22(75.8%)
Study design and method					
Quantitative studies					
Cross-sectional	5 (17.2%)	—	—	—	(17.2%)
Conversation	1 (3.4%)	—	—	—	1 (3.4%)
Observational study	1 (3.4%)	—	—	—	1 (3.4%)
Not mentioned	3 (10.3%)	—	—	—	3 (10.3%)
Qualitative studies					
Ethnographic study	—	4 (13.7%)	—	—	4 (13.7%)
Interview	—	3 (10.3%)	—	—	3 (10.3%)
Audio record	—	2 (6.8%)	—	—	2 (6.8%)
Mixed Method	—	—	3 (10.3%)	—	3 (10.3%)
Narrative/Systematic Review	—	—	—	7 (24.1%)	7 (24.1%)
Unit of Analysis					
Patient	2 (6.8%)	—	—	1 (3.4%)	3 (10.3%)
Pharmacist	4 (13.7%)	1 (3.4%)	1 (3.4%)	1 (3.4%)	7 (24.1%)
Patient and Pharmacist	4 (13.7%)	8 (27.5%)	2 (6.8%)	2 (6.8%)	16 (55.1%)
Not mentioned	—	—	—	3 (10.3%)	3 (10.3%)
Study areas					
Social/Administrative Pharmacy	7 (24.1%)	2 (6.8%)	1 (3.4%)	5 (17.2%)	15 (51.7%)
Social Sciences	1 (3.4%)	3 (10.3%)	1 (3.4%)	2 (6.8%)	7 (24.1%)
Multidiscipline (Health Policy, Public Health, Medicine)	2 (6.8%)	4 (13.7%)	1 (3.4%)	—	7 (24.1%)

Note. * Country status distinguishes according to the world population review

(Waring et al., 2016), Calgary–Cambridge guide (Greenhill et al., 2011), and the behavioral model of healthcare utilization (Sunpuwan et al., 2019). Moreover, one of the systematic review studies included the transmission and transaction models (Shah & Chewning, 2006).

Findings from the analysis indicate that the majority of the studies had a poor study design because 23 of them (79.3%) did not discuss the sampling method and did not apply any theoretical approach or model. Five of the quantitative studies (17.2%) utilized a cross-sectional study design (Al Hussaini et al., 2018; Fang et al., 2011; Hendrickson et al., 2016; Khan et al., 2013; Saha & Hossain, 2017). Four of the qualitative studies (13.7%) utilized an ethnographic study design (Kamat & Nichter, 1998; Patton et al., 2018; Seeberg, 2012; Vuckovic & Nichter, 1997). Notably, seven of the studies (24.1%) utilized secondary data. Only Shah and Chewning (2006) reviewed pharmacist–patient communication in the United States-based literature between 1980 and 2004.

Four (13.7%) of the quantitative studies focused on both patient and pharmacist standpoints, while four (13.7%) and two (6.8%) of the studies focused only on pharmacist and patient perspectives, respectively. Conversely, eight (27.5%) of the qualitative studies included both pharmacists' and patients' experiences.

Two of the studies in developed countries—Japan and Australia (Chong et al., 2014; Nakayama et al., 2016)—found that every pharmacist had a bachelor's or master's degree in pharmacy, whereas the finding that pharmacists registered in the recent five years got higher scores in patient-centered communication might be for the new inclusion of patient-centeredness in the curriculum (Chong et al., 2014). However, in developing countries, such as India, operating a pharmacy (42%) is a family business, and drugs are dispensed by the sales assistant (Kamat & Nichter, 1998). In Bangladesh, 49% of drug sellers have no certified training on storing, dispensing, and selling drugs (Ahmed et al., 2017).

The majority of studies (75%) identified the alignment of scientific disciplines from the professional pharmacy and pharmacist's point of view. These include pharmacy, social pharmacy, social and administrative pharmacy, or pharmaceutical science (15 studies), and seven studies from multidisciplinary fields that include health policy, public health, nursing, and medicine. The

result reported the understudied aspects (seven studies) from the social sciences perspective.

Context of Drug Transactional Interactions in Pharmacy

Drug deal-purpose interaction in pharmacy care is a common practice. However, the patterns of transactions, the phenomenon, and the subject matter of the research studies varied in the context of developed and developing countries. In developed countries, drug regulation enforcement, drug market, and over-the-counter drugs (OTCs) in pharmacy care settings are strongly controlled by intensive monitoring and evaluation. In addition, pharmacists are professionally trained and educated as primary health care providers. The available research studies focused on the pharmacist–patient interaction to be more collaborative and participatory. The results of the reviewed literature have shown that developed countries have already identified the pharmacist–patient interaction, communication patterns, skills, and barriers that hinder effective communication. Many of these studies found that an interaction between the pharmacist and the purchaser is led by the pharmacist, which indicates a one-way interaction (Shah & Chewning, 2006). The possible barriers found referred to the fact that pharmacists emphasized the biomedical exchange of information (Chong et al., 2014; Nakayama et al., 2016) rather than the patient's social, cultural, and economic background. However, none of the studies addressed the reasons behind the barriers and how these barriers affected purchaser health.

The Role of Pharmacists in Developing Countries

The reviewed literature explored the role of pharmacists (Azhar et al., 2009; Logan, 1988; Rakib et al., 2015) and highlighted the current scenarios of the pharmacy profession (Khan et al., 2013; Sakeena et al., 2018; Sunpuwan et al., 2019). The summary of the results was the limited role in pharmacy care, non-recognition by other health professionals, and lack of awareness about the role and care. Notably, the pharmacist's role was identified as managerial activities rather than client services. Of note, 71% of pharmacists were professionally qualified, but they had little contact with patients at the front counter (Kamat & Nichter, 1998). The results also established that specific information provision on drugs was low and that 54% of patients were consulted for physician

selection, whereas pharmacists put an extra effort to provide alternative drugs against clients' requests (Al Hussainin et al., 2018).

Knowledge, Perception, and Practices

The reviewed studies emphasized pharmacist knowledge, behavior, perception, and practices of drugs to examine and investigate the pharmacist–patient interaction (Al Hussaini et al., 2018; Hendrickson et al., 2016). In contrast, few studies have evaluated patients' perceptions of pharmacists and pharmacy care (Chua et al., 2013; Khan et al., 2013). The results indicated that the majority of patients perceived pharmacy care positively, frequently inquiring about the purpose or availability of a drug and seeking advice for minor health problems (Chua et al., 2013; Khan et al., 2013). The majority of the studies about the knowledge, perception, and practices of pharmacy care were conducted only in developing countries' contexts.

Process and Strategies of Communication in Developed Country

Presenting the results of the reviewed literature identified a variety of measures for interaction and communication. Five studies explored the communication process and strategies applying different guides or methods, such as the Calgary–Cambridge guide (Greenhill et al., 2011), face-work theory (Murad et al., 2017), and the RIAS method (Cavacoa & Roter, 2010; Chong et al., 2014; Nakayama et al., 2016). These studies collectively represent the findings that greetings and closing sessions of the drug transactional interaction found positive communication skills, but information gathering, patient participation, and psychosocial aspects were poorly communicated. This might lead to irrational use of drugs.

Nature of Drug Transaction in Pharmacy

The findings from the analysis indicate that the availability and transaction of drugs varied in the context of developed and developing countries. Most developing and less developed countries face multifaceted challenges to control regulations, drug markets, and OTC drugs. The results pointed out that prescription drugs do not exist in the context of developing countries due to open selling and are often wrongly used due to a lack of adequate information (Geest, 1983). In contrast, community people visit pharmacies to buy medicines and health supplements

or to seek advice for poor health conditions (Chua et al., 2013). Moreover, people collect drugs from drug shops directly by using the name of drugs, showing old samples of the medicine, presenting a piece of paper or symptoms, specifying certain parts of the body, and describing the shape, form, and color of the medicine (Kamat & Nichter, 1998). In Bangladesh, 66.2% of drugs are dispensed on client requests, and 33.8% are recommended by drug sellers at pharmacies (Saha & Hossain, 2017). Surprisingly, in Mumbai, 99% of people seek drugs from clerks or shop attendants (Kamat & Nichter, 1998). One study mentioned that what has not been addressed is the manner in which images of medicines are associated with particular illnesses (Vuckovic & Nichter, 1997).

Decision About Drug Purchase

The scoping review results identified several factors that influence drug decisions. These are family members, peers, friends, trustworthy providers, previous experiences, drug availability, and control mechanisms of drug markets inclined to decide about medicines purchase and consumption (Kloos et al., 1988; de Kok et al., 2018; Logan, 1988; Patton et al., 2018). One study described the changes in expectations and use of drugs among U.S. people (Vuckovic & Nichter, 1997). However, the issue of improved technology, available communication, and information sources such as the Internet, mobile phones, newspapers, and trustworthy sources, might be influential in the drug purchase decision process for further studies. Thus, the drug decision-making process and determinant factors might be interlinked to explore the interaction process.

Barriers to Communication and Interaction

The reviewed studies attempted to identify the characteristics and problems of the pharmacist–patient interaction (Fang et al., 2011; Nakayama et al., 2016). The main barrier identified was pharmacists concentrating on medication information instead of the patient's background and health promotion. Poor external conditions and shortages of time and skills were identified as the key reasons for communication barriers. However, external conditions have not been reported. Conversely, interactions were identified as one-way because they seemed pharmacist-led (Shah & Chewning, 2006; Waring et al., 2016). However, the barriers to patient participation in the communication

Table 5*Key Issues Discussed in the Reviewed Articles*

Common issues discussed in articles	Discussed in the Study number
Pharmacist role, knowledge, behavior and sales practices	15,16, 19,20,22, 26, 28
Communication and interaction strategies	1,2,3,4, 10,23, 25, 27
Way of operating pharmacy and drug dispensing patterns	5,6,18, 21,
Utilization and factors of drug transaction practices	7,8,9,14, 24, 12,13, 29
Barriers to communication and interaction	4, 10, 13, 23,

Note. Study number shown in Table 3.

process to learn medication use, possible reactions, and negotiation for shared decision-making about drugs have not been identified.

Discussion

Summary of the Results

This scoping review provides a comprehensive overview of the study patterns, locations, sample characteristics, used methods, study issues about the pharmacist-patient drug transactional interactions for primary health care, and the influencing factors of a drug transaction in the pharmacy care settings. Twenty-nine studies met the inclusion criteria focused on the pharmacist-patient interaction and communication at the community pharmacy. Most quantitative studies identified cross-sectional design (Al Hussaini et al., 2018; Fang et al., 2011; Hendrickson et al., 2016; Khan et al., 2013; Saha & Hossain, 2017), and none found experimental. In addition, only four ethnographic studies (Kamat & Nichter, 1998; Patton et al., 2018; Seeberg, 2012; Vuckovic & Nichter, 1997) were found among all the qualitative studies. Notably, the unit of analysis identified most on pharmacist and patient-pharmacist populations, whereas only two studies (Cavacoa & Roter, 2010; Khan et al., 2013) included the patient population reported understudied in this review.

Findings revealed that most studies focused on the pharmacist's point of view (profession centric), biomedical information exchange, business, and legal assumptions to explore the drug transactional

interaction between the pharmacist-patient interactions. However, few studies focused on the socio-cultural, economic, and political context of the health-seeking exchange, drug transactional interaction, negotiations, and drug decisions from the patient's point of view. However, WHO already acknowledged the potential barriers as neglecting the patient's expectation, negotiation, socio-cultural beliefs, and economic context in pharmacist-patient interactions for primary health care in the community pharmacy care settings (Wiedenmayer et al., 2006).

Agreement and Disagreement

Studies on drug transactional interactions have been conducted mostly in the context of developed countries (Greenhill et al., 2011; de Kok et al., 2018; Murad et al., 2017; Nakayama et al., 2016; Nusair et al., 2018; Patton et al., 2018; Shah & Chewing, 2006; Waring et al., 2016). These studies turned the research focus from interaction and communication to ensure a participatory, collaborative, and patient-centric point of view. In contrast, studies in developing countries have focused on recognizing the role of pharmacists, care, services, and drug dispensing patterns in pharmacy care settings (Ahmed et al., 2017; Azhar et al., 2009; Chua et al., 2013; Hendrickson et al., 2016; Kamat & Nichter, 1998; Khan et al., 2013; Logan, 1988; Rakib et al., 2015; Saha & Hossain, 2017; Sakeena et al., 2018; Seeberg, 2012; Vocovic & Nichter, 1997). The reasons for this might be the shortages of professional and trained pharmacists (Ahmed et al., 2017) and the non-recognition of the pharmacist's role by other healthcare professionals (Azhar et al., 2009), although WHO

recognizes pharmacists as “drug therapy managers” for primary health care (Wiedenmayer et al., 2006).

The interaction and communication direction were identified as one-way, from the pharmacist to patients, in developed countries. However, patients’ perceptions of pharmacy care in the context of developing countries are understudied. Pharmacists were more involved in managerial activities, such as stock maintenance and contact with drug supplies (Kamat & Nichter, 1998), rather than client services at front desks in most Asian countries. The sales assistant mostly dispensed the drug.

The interaction and communication between the pharmacist and the patient focused on biomedical information exchanges (Chong et al., 2014; Fang et al., 2011; Nakayama et al., 2016), but the patients’ socioeconomic and cultural issues were little addressed. If the pharmacist is not informed about the patients’ economic affordability, cultural beliefs about health, and medicines, the drug transaction interaction might not be significant. Thus, studies need to focus on patients’ social, economic, and cultural factors to make the drug transactional interaction fruitful and rational for drug use.

The majority of studies focused on interaction strategies from the professional-centric point of view, such as pharmacist role, knowledge, behavior, and drug sales practices. However, very few studies have explored drug transactional interaction patterns from the patient-centric point of view in the context of developed countries, with none being found in the context of developing countries like Bangladesh.

Drug transaction patterns, pharmacist training, utilization of pharmacy care, and drug regulation are controlled in developed countries. However, in the context of developing countries, like most Asian countries, drugs are transacted in a self-medicated way, even with prescription-only drugs. Professional and trained pharmacists are working in drug manufacturing rather than dispensing in pharmacy care settings. Besides, pharmacies are utilized not only for drug purchases but also for consultations for physician appointments (Al Hussaini et al., 2018).

Although the drug transactional interaction and utilization of pharmacy care in developing countries might be irrational from a pharmaceutical point of view, the transaction is accepted by the patients, especially those living in poverty, because they can at

least access medicines. Thus, further studies need to understand the drug transactional interaction from a patient’s point of view.

Scope of Future Research and Policy Implication

The themes of this scoping research were health interaction between the demand side of patients and the supply side of pharmacists. Demand-side expectations, use of drugs, supply-side roles, marketing strategies, and competition have changed over time. Patients’ own rationality or drug distribution outlines might form medicine-related behaviors or stimulate an individual culture of medicines. The findings of this scoping review pointed out that the research gaps include the paucity of research from social sciences and qualitative research in this area from the patient-centric point of view. Thus, the complexities of drug transactions in pharmacy settings commencing with patients’ way of explaining health discomfort, expecting drugs, and the pharmacist manner in response convince that patients and their health problems might be a prerequisite for further studies. Understanding the local context of healthcare practices data might help both the sellers and clients to educate and be more accountable for the knowledge about the use of medicines, their adverse effects, quality, safety, and rational use that will contribute to the implementation of a national drug policy as well as universal health coverage, along with attaining the third sustainable development goal (SDG 3.8) “access to safe, effective quality and affordable medicines and vaccines for all.”

Strengths and Limitations

It is highly possible to miss relevant articles in the scoping review approach. However, the limitations include the possibility that studies on drug transaction patterns could be more effectively compared and contrasted between higher-income countries and LMICs. Another limitation of this scoping review is the fact that only English articles were included; thus, important research articles published in other languages may have been overlooked. To overcome these, the search strategy and review were iterative processes employed to modify the search multiple times. The teamwork and continuous meetings helped to complete this work. Thus, the drug transactional interaction from the patient’s point of view might contribute to ensuring the quality, safety, and rational use of drugs.

Conclusion

The findings of this scoping review provided valuable insights into the drug transaction interaction and communication patterns between the patient and pharmacist. The majority of the studies in developed countries focused on the communication and interaction strategies from the provider-centric point of view and recommended ensuring the participatory, collaborative, and patient-centric approach. In contrast, developing countries still struggle to identify and recognize the role of pharmacists, dealing with shortages in terms of trained pharmacists, drug dispensing patterns, and utilization of pharmacy care by a trained provider, which reflects the irrational use of medicines that contributes to negative health outcomes.

Acknowledgment

The authors wish to acknowledge Dr. Nathani Meemon, Dr. Mark Stephan Felix, Dr. Seung Chun Paek, and Dr. Darunee Phukao, faculty members, Department of Society and Health, Mahidol University, for their guidance in the scoping review process.

Declaration of Ownership

This article is our original work.

Conflict of Interest

The authors have no conflict of interest to declare.

Ethical Clearance

This scoping review was based on secondary literature and did not involve human participants or animals. The study was granted ethical approval from CIRB-Mahidol University.

References

- Ahmed, S. M., Naher, N., Hossain, T., & Rawal, L. B. (2017). Exploring the status of retail private drug shops in Bangladesh and action points for developing an accredited drug shop model: A facility based cross-sectional study. *Journal of Pharmaceutical Policy and Practice, 10*, Article 21. <https://doi.org/10.1186/s40545-017-0108-8>
- Aitken, M., & Gorokhovich, L. (2012). *Advancing the responsible use of medicines: Applying levers for change*. IMS Institute for Healthcare Informatics. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2222541
- Al Hussaini, M., Alsaffar, N., & Abdulraheem, A. (2018). Exploring community pharmacists' knowledge, perception and experiences towards branded and generic medicines in Kuwait: Highlighting the role of pharmacist. *Bulletin of Faculty of Pharmacy, Cairo University, 56*(1), 109–114. <https://doi.org/10.1016/j.bfopcu.2018.03.005>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19-32. <https://doi.org/10.1080/1364557032000119616>
- Azhar, S., Hassali, M. A., Ibrahim, M. I., Ahmad, M., Masood, I., & Shafie, A. A. (2009). The role of pharmacists in developing countries: The current scenario in Pakistan. *Human Resources for Health, 7*, Article 54. <https://doi.org/10.1186/1478-4491-7-54>
- Cavacoa, A., & Roter, D. (2010). Pharmaceutical consultations in community pharmacies: Utility of the Roter interaction analysis system to study pharmacist–patient communication. *International Journal of Pharmacy Practice, 18*, 141–148. <https://doi.org/10.1211/ijpp.18.03.0003>
- Chong, W. W., Aslani, P., & Chen, T. F. (2014). Pharmacist-patient communication on use of antidepressants: A simulated patient study in community pharmacy. *Research in Social and Administrative Pharmacy, 10*(2), 419–437. <https://doi.org/10.1016/j.sapharm.2013.05.006>
- Chua, S. S., Lim, K. P., & Lee, H. G. (2013). Utilisation of community pharmacists by the general public in Malaysia. *International Journal of Pharmacy Practice, 21*(1), 66–69. <https://doi.org/10.1111/j.2042-7174.2012.00219.x>
- Colquhoun, H. L., Levac, D., O'Brien, K. K., Straus, S., Tricco, A. C., Perrier, L., Kastner, M., & Moher, D. (2014). Scoping reviews: time for clarity in definition, methods, and reporting. *Journal of Clinical Epidemiology, 67*(12), 1291–1294. <https://doi.org/10.1016/j.jclinepi.2014.03.013>
- Donaldson, L. J., Kelley, E. T., Dhingra-Kumar, N., Marie-Paule Kieny, M. P., & Sheikh, A. (2017). *Medication without harm: WHO's third global patient safety challenge*. World Health Organization. [https://doi.org/10.1016/S0140-6736\(17\)31047-4](https://doi.org/10.1016/S0140-6736(17)31047-4)
- Fang, Y., Yang, S., Feng, B., Ni, Y., & Zhang, K. (2011). Pharmacists' perception of pharmaceutical care in community pharmacy: A questionnaire survey in Northwest China. *Health and Social Care in the Community, 19*(2), 189–197. <https://doi.org/10.1111/j.1365-2524.2010.00959.x>

- Geest, S. v. d. (1983). Non-information for patients: Selling drugs in developing countries. *Pharmacy International*, 4(2), 42–44.
- Greenhill, N., Anderson, C., Avery, A., & Pilnick, A. (2011). Analysis of pharmacist-patient communication using the Calgary-Cambridge guide. *Patient Education and Counseling*, 83(3), 423–431. <https://doi.org/10.1016/j.pec.2011.04.036>
- Hendrickson, C., Fetters, T., Mupeta, S., Vwallika, B., Djemo, P., & Raisanen, K. (2016). Client-pharmacy worker interactions regarding medical abortion in Zambia in 2009 and 2011. *International Journal of Gynecology and Obstetrics*, 132(2), 214–218. <https://doi.org/10.1016/j.ijgo.2015.07.008>
- Kamat, V. R., & Nichter, M. (1998). Pharmacies, self-medication and pharmaceutical marketing in Bombay, India. *Social Science & Medicine*, 47(6), 779–794. [https://doi.org/10.1016/S0277-9536\(98\)00134-8](https://doi.org/10.1016/S0277-9536(98)00134-8)
- Khan, M. U., Khan, A. N., Ahmed, F. R., Feroz, Z., Rizvi, S. A., Shah, S., Hussain, R., & Adil, Z. (2013). Patients' opinion of pharmacists and their roles in health care system in Pakistan. *Journal of Young Pharmacists* 5(3), 90–94. <https://doi.org/10.1016/j.jyp.2013.08.001>
- de Kok, B. C., Widdicombe, S., Pilnick, A., & Laurier, E. (2018). Doing patient-centredness versus achieving public health targets: A critical review of interactional dilemmas in ART adherence support. *Social Science & Medicine*, 205, 17–25. <https://doi.org/10.1016/j.socscimed.2018.03.030>
- Kloos, H., Getahun, B., Teeferi, A., Tsadol, G.K., & Belay, S. (1988). Buying drugs in Addis Ababa: A quantitative analysis. Geest, S.v.d. & White, S.R. The context of medicines in developing countries: Studies in pharmaceutical anthropology. 81-106. *Kluwer Academic Publishers*. <http://www.sjaakvandergeest.socsci.uva.nl/pdf/medicines/context-med-contents.pdf>
- Logan, K. 1988. 'Casi como doctor': Pharmacists and their clients in a Mexican urban context. Geest, S.v.d. & White, S.R. The context of medicines in developing countries: Studies in pharmaceutical anthropology. 107-130. *Kluwer Academic Publishers*. <http://www.sjaakvandergeest.socsci.uva.nl/pdf/medicines/context-med-contents.pdf>
- Mesquita, A. R., Lyra, D. P., Jr., Brito, G. C., Balisa-Rocha, B. J., Aguiar, P. M., & de Almeida Neto, A. C. (2010). Developing communication skills in pharmacy: A systematic review of the use of simulated patient methods. *Patient Education and Counseling*, 78(2), 143–148. <https://doi.org/10.1016/j.pec.2009.07.012>
- Murad, M. S., Spiers, J. A., & Guirguis, L. M. (2017). Expressing and negotiating face in community pharmacist-patient interactions. *Research in Social and Administrative Pharmacy*, 13(6), 1110–1126. <https://doi.org/10.1016/j.sapharm.2016.10.003>
- Nakayama, C., Kimata, S., Oshima, T., Kato, A., & Nitta, A. (2016). Analysis of pharmacist-patient communication using the Roter method of interaction process analysis system. *Research in Social Administrative Pharmacy*, 12(2), 319–326. <https://doi.org/10.1016/j.sapharm.2015.05.007>
- Nusair, M. B., & Guirguis, L. M. (2018). Thoroughness of community pharmacists' assessment and communication using the patient care process. *Research in Social and Administrative Pharmacy*, 14(6), 564–571. <https://doi.org/10.1016/j.sapharm.2017.07.002>
- Patton, S. J., Miller, F. A., Abrahamyan, L., & Rac, V. E. (2018). Expanding the clinical role of community pharmacy: A qualitative ethnographic study of medication reviews in Ontario, Canada. *Health Policy*, 122(3), 256–262. <https://doi.org/10.1016/j.healthpol.2017.10.007>
- Pisani, E., Nistor, A.-L., Hasnida, A., Parmaksiz, K., Xu, J., & Kok, M. O. (2019). Identifying market risk for substandard and falsified medicines: An analytic framework based on qualitative research in China, Indonesia, Turkey and Romania. *Wellcome Open Research*, 4(70). <https://doi.org/10.12688/wellcomeopenres.15236.1>
- Rakib, A., Sarwar, M. S., Zannah, S., Khanum, S., & Rashid, M. (2015). A survey of the role of community pharmacists in Dhaka City, Bangladesh. *Bangladesh Pharmaceutical Journal*, 18(2), 137–141. <https://doi.org/10.3329/bpj.v18i2.24312>
- Sabaté, E. (2003). *Adherence to long-term therapies: Evidence for action*. World Health Organization
- Saha, S., & Hossain, M. T. (2017). Evaluation of medicines dispensing pattern of private pharmacies in Rajshahi, Bangladesh. *BMC Health Services Research*, 17(1), Article 136. <https://doi.org/10.1186/s12913-017-2072-z>
- Takeena, M. H. F., Bennett, A. A., & McLachlan, A. J. (2018). Enhancing pharmacists' role in developing countries to overcome the challenge of antimicrobial resistance: A narrative review. *Antimicrobial Resistance and Infection Control*, 7, Article 63. <https://doi.org/10.1186/s13756-018-0351-z>
- Seeberg, J. (2012). Connecting pills and people: An ethnography of the pharmaceutical nexus in Odisha, India. *Medical Anthropology Quarterly*, 26(2), 182–200. <https://doi.org/10.1111/j.1548-1387.2012.01200.x>
- Shah, B., & Chewning, B. (2006). Conceptualizing and measuring pharmacist-patient communication: A review of published studies. *Research in Social Administrative Pharmacy*, 2(2), 153–185. <https://doi.org/10.1016/j.sapharm.2006.05.001>
- Sunpuwan, M., Punpuing, S., Jaruruengpaisan, W., Kinsman, J., & Wertheim, H. (2019). What is in the drug packet?: Access and use of non-prescribed poly-pharmaceutical packs (Yaa Chud) in the community in Thailand. *BMC*

- Public Health*, 19, Article 971. <https://doi.org/10.1186/s12889-019-7300-5>
- Vuckovic, N., & Nichter, M. (1997). Changing patterns of pharmaceutical practice in the United States. *Social Science & Medicine*, 44(99), 1285–1302. [https://doi.org/10.1016/s0277-9536\(96\)00257-2](https://doi.org/10.1016/s0277-9536(96)00257-2)
- Waring, J., Latif, A., Boyd, M., Barber, N., & Elliott, R. (2016). Pastoral power in the community pharmacy: A Foucauldian analysis of services to promote patient adherence to new medicine use. *Social Science & Medicine*, 148, 123–130. <https://doi.org/10.1016/j.socscimed.2015.11.049>
- Wiedenmayer, K., Summers, R.S., Mackie, C.A., Gous, A.G.S., & Everard, M. (2006). *Developing Pharmacy Practice: A Focus on Patient Care*. World Health Organization and International Pharmaceutical Federation.
- Wiedenmayer, K. (2000). Rational use of medicines. In S. C. Anderson, R. Summers, & K. Wiedenmayer (Eds.), *Managing pharmaceuticals in international health* (pp. 141–152). Birkhauser Verlag.
- World Health Organization. (2019). *Medication safety in high-risk situation*. <https://apps.who.int/iris/handle/10665/325131>
- World Health Organization. (2017). *WHO launches global effort to halve medication-related errors in 5 years*. <http://www.who.int/mediacentre/news/releases/2017/medication-related-errors/en/>
- World Health Organization. (2014). *WHO global health expenditure atlas*. <https://www.who.int/health-accounts/atlas2014.pdf>