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Pharmacists' Perceptions of Barriers to Providing Appropriate Pharmaceutical Services in Community Pharmacies

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ABSTRACT

Background: In order to achieve the goals of community pharmacy practice, its legal, labour-related, and economic barriers need to be identified. This study examined pharmacists' perceptions of constraints on providing optimal pharmacy services in order to identify underlying factors and analyse the associations between barriers and pharmaceutical services in community pharmacies. **Methods:** A survey targeting pharmacy owners was conducted from May to June 2012 using a structured questionnaire including nine pharmaceutical service items. According to the service provision level, we classified pharmacists as inactive (fewer than 5 items among the listed 9 service items) and active providers (5 or more items). Principal component analysis was used to group significant factors for barriers into four thematic components. Associations between the participants' demographics and pharmacy characteristics and the services provided were explored by logistic regression analyses. **Results:** Participants were 402 pharmacists. Over 60% provided disease management services for hypertension, diabetes, and hyperlipidaemia. Variables that affected pharmaceutical services included the lack of separate areas for patient counselling (OR: 2.12, 95% CI: 1.18–3.80), and clinical knowledge and information-related barriers (OR: 0.59, 95% CI: 0.36–0.97). **Conclusion:** Strategies for improving clinical knowledge and providing expeditious information are necessary in order to improve community pharmacy services.

KEY WORDS: community pharmacist, pharmaceutical service, perception, barriers, clinical knowledge

Pharmacists are responsible for the outcomes of medicine use, and therefore evolve their practices to provide patients with enhanced services. As health-care professionals, pharmacists play an important role in improving access to health care by reducing the gap between the potential benefits of medication and its realised value. Thus, they are integral to any comprehensive health system.[1)] To achieve the aims of pharmacy practice, that is, improving health and medicine use, the legal, labour-related, and economic frameworks of practice need to be established.

Community pharmacists are no longer passive individuals behind the prescription counter, responsible only for dispensing medications prescribed by physicians. With rapid changes in the healthcare environment, pharmacists' primary interests are shifting from pharmaceutical products to patient care, focusing on disease prevention and wellness, as well as providing a contin-

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uum of care.[2] To meet societal trends and patients' current needs, pharmacists should strive to expand and improve pharmacy services.

South Korea's 2000 pharmaceutical reform enforces a legal separation between prescribing and dispensing, with the greater responsibility marking a new era in the pharmacist's role. This required strengthening pharmacists' professional abilities to ensure quality of patient-centred pharmacy services.[3-5] To meet this challenge, the pharmacy school curricula in South Korea was recently restructured and the term was extended from four to six years.[6] This reform has nationwide acceptance, with the expectation that the population's health will improve owing to the presence of more qualified professionals working in pharmacies.

In South Korea, about 73% of the pharmacists affiliated with the Korea Pharmaceutical Association work in approximately 20,000 community pharmacies, nationwide.[7,8] However, community pharmacists are still primarily focused on providing dispensing services, and provide insufficient professional services such as medication counselling and health promotion activities, contrary to recommendations from the World Health Organization and International Pharmaceutical Federation, causing concern for the reliability of healthcare providers and patient satisfaction.[9-12]

Pharmaceutical care and healthcare services provided in community pharmacies are associated with better clinical outcomes, cost savings, and increased patient satisfaction.[13] These represent the pharmacist's core roles, particularly because patients have better access to pharmacists than other health care providers in many countries.[14] To meet societal expectations of a community pharmacist, barriers that prevent adequate provision of pharmacy services need to be identified.

Aim

This study attempted to identify barriers to optimal pharmacy services as perceived by pharmacists, to examine the factors influencing those perceived barriers, and to determine the associations between barriers and the implementation of pharmaceutical services in community pharmacies. The findings could help design strategies to help community pharmacies provide optimal services.

METHODS

Study design and participants

This study designed as a questionnaire survey with a convenience sample was conducted from May to June 2012. Participants were pharmacists running community pharmacies who either attended continuing education programs from May to June 2012 or the Pharm Expo Korea 2012 hosted by the Korea Pharmaceutical Association. The research team administered the structured questionnaire face-to-face with obtaining written informed consent.

Survey questionnaire

The self-administered questionnaire was specifically designed for this study to investigate the status of pharmacy services provided by the respondents and document their perceptions of the barriers that prevent them from providing optimal pharmaceutical services. The questionnaire was based on previous research in pharmacy.[10-14] and consultations with several experts in the field as well as community pharmacists. The questionnaire was suitably modified after a pilot study on seven pharmacists. The structured questionnaire included three sections: (1) participants' demographics and pharmacy practice characteristics; (2) pharmaceutical services provided; and (3) their perception on 16 potential barriers that limit the provision of pharmacy services. Respondents' perceptions of the extent of the presence of each barrier were measured using a five-point Likert scale (strongly disagree, disagree, neutral, agree, and strongly agree), with higher scores implying greater presence.

Data analysis

The means and standard deviations (for continuous variables) and frequencies with proportions (for discrete variables) were calculated for the characteristics of the participants and their pharmacies. These included pharmacist-related variables such as gender, age, community pharmacy experience, and participation in continuing education; and pharmacy-related variables, such as the pharmacy's size, location, medical institution proximity, franchise contract, patient counselling space, closing days, scope of products handled, prescription volume, and dependency on drug dispensing services. Respondent rate and scores were calculated for the 9 pharmaceutical services, which were as follows: written instructions for medication; disease-related management for diseases such as hypertension, diabetes, asthma, hyperlipidaemia, and depression; medication history management; over-the-counter self-medication review; and home visit services for medication management. To further examine the characteristics of the perceived barriers, the 16 items were thematically categorized into manageable factors by principal component analysis.[18,19] Potential barrier items with eigen-values greater than 0.50 were grouped into four relevant factors, and each potential barrier item was loaded on one factor group.

The impact of perceived barriers on the provision of services was explored using logistic regression analysis, by calculating

the odds ratios (OR) with 95% confidence intervals (95% CI). For the dependent variable, we classified pharmacists by service provision level into inactive providers (fewer than 5 items from the 9 service items) and active providers (5 or more items). All statistical analyses were performed using SAS version 9.2 (SAS Institute Inc, Cary, NC).

RESULTS

Participants' demographics and pharmacy characteristics

Of the 402 pharmacists who participated in this survey, 55.4%

Table 1. Respondents' demographics and pharmacy practices.

Characteristics		n	%
Total respondents		402	100.0
Pharmacist			
Sex (n = 401)	Men	179	44.6
	Women	222	55.4
Age (years old) (n = 400)	20-39	60	15.0
	40-49	139	34.8
	50-59	137	34.3
	60-	64	16.0
Experience in community pharmacy (years) (n = 394)	Mean (SD)	17.9(10.6)	
	≤ 10	125	31.7
	> 10 to ≤ 20	123	31.2
	> 20	146	37.1
Participation in regular continuing education programs (n = 392)	Always	297	75.8
	Sometimes	85	21.7
	None	10	2.6
Pharmacy and practice			
Pharmacy location (n = 396)	Metropolitan area	193	50.1
	City area	159	40.3
	Rural area	33	8.6
Medical centre near pharmacy (n = 396)	1 or more general hospitals	16	4.0
	1 or more hospitals	79	20.0
	2 or more clinics	146	36.9
	1 clinic	127	32.1
	No medical centre	28	6.1
Franchise contracted (n = 395)	Yes	56	14.2
	No	339	85.8
Size of pharmacy (m²) (n = 399)	Mean (SD)	64.9(37.5)	
	Small (≤ 40)	111	27.8
	Medium (> 40 to ≤ 80)	183	45.9
	Big (> 80)	105	26.3

Table 1. (continued) Respondents' demographics and pharmacy practices.

Characteristics		n	%
Pharmacy and practice			
Separated counselling space (n = 399)	Yes	90	22.6
	No	309	77.4
Opening hours per day (n = 397)	Mean (SD)	11.5(1.3)	
	< 10	38	9.6
	≥ 10 to < 12	174	43.8
	≥ 12 to < 14	175	44.1
	≥ 14	15	3.8
Closing days per month (n = 377)	Mean (SD)	5.7(7.2)	
	< 5	281	74.5
	≥ 5	96	25.5
No. of prescriptions per day (n = 402)	Mean (SD)	81.4(114.4)	
	< 10	153	38.1
	≥ 10 to < 75	96	23.9
	≥ 75 to < 100	56	13.9
	≥ 100	97	24.2
No. of all the products handled (n = 250)	Mean (SD)	1145(1,205)	
	< 500	72	28.8
	≥ 500 to < 1,000	64	25.6
	≥ 1,000 to < 1,500	43	17.2
	≥ 1,500 to < 2,000	15	6.0
	≥ 2,000	56	22.4
Handling of minor products[1] (n = 398)	Yes	124	31.2
	No	274	68.8
Proportion of drug dispensing services contributing to pharmacy revenue (%) (n = 376)	Mean (SD)	64.1(22.9)	
	< 30	30	8.0
	≥ 30 to < 50	38	10.1
	≥ 50 to < 70	93	24.7
	≥ 70	215	57.2
No. of pharmacists (full and part time)[2] (n = 343)	Mean (SD)	1.5(0.8)	
	1	224	65.3
	2	81	23.6
	≥ 3	38	11.1
No. of non-pharmacist supporting staff (full and part time)[3] (n = 343)	Mean (SD)	1.1(1.1)	
	0	104	30.3
	1	137	39.9
	2	70	20.4
	≥ 3	32	9.3

[1]Minor products: cosmetics, medical devices, etc. except prescription drugs, over-the-counter products, dietary supplements, and herbal medicines.
[2]Average working hours of full-time and part-time pharmacists per week were 40 hours and 12 hours, respectively.
[3]Average working hours of full-time and part-time non-pharmacist supporting staff per week were 38 hours and 15 hours, respectively.

were women and 69.1% were aged 40-59 years. On average, participants had 17.9 years of experience in community pharmacy, and 75.8% regularly participated in continuing education programmes. Half of participants owned pharmacies in metropolitan areas (50.1%), and regardless of region, most were located near clinics (69.0%), followed by hospitals (24.0%). Additionally, the majority of pharmacies were non-franchise contracted (85.8%). The mean area of pharmacies was 64.9 m^2 and a large number of pharmacies had no separate counselling space (77.4%). Pharmacies operated for approximately 11.5 hours per day, and closed for 5.7 days per month. On average, the pharmacies dispensed 81.4 prescriptions per day. An average of 1,145 pharmaceutical products was marketed by the pharmacies. Non-pharmaceutical products, such as cosmetics or medical devices - excluding prescription drugs, over-the-counter products, dietary supplements, and herbal medicines - were also sold by 68.8% of the pharmacies. Drug dispensing services contributed to more than half (64.1%) of the overall pharmacy's revenue. Moreover, an average of 1.5 pharmacists and 1.1 non-pharmacist supporting staff worked together in the pharmacy (Table 1).

Pharmaceutical services

Over 60% of participants answered that they provided patient with disease management services for hypertension, diabetes, and hyperlipidaemia, which included comprehensive clinical medication management services such as patient counselling and therapeutic medication management.[20] However, more than 50% of participants did not provide written medication instructions, depression management, and home visit services. Only 52.3% provided five or more services of the nine listed services (Table 2).

Pharmacists' perception of barriers

Of the 16 potential barriers, the lack of legal support received the highest score, and thus was perceived as the greatest barrier (mean score 3.33). This was followed by time constraints (mean 3.29), and inadequate educational materials (mean 3.23). Barriers receiving scores of 4 and 5 by more than 40% of the respondents were time constraints (43.4%), no separate space for counselling (43.1%), lack of collaboration with prescribers (42.4%), lack of legal support (42.3%), lack of pharmacists (41.8%), and inadequate educational materials (40.3%) (Table 3).

Underlying factors for barriers

The 16 barriers were grouped under the following four factors using principal component analysis: time and workforce-related barrier (Factor 1); clinical knowledge and information-related barrier (Factor 2); circumstance-related barrier (Factor 3); and miscellaneous barrier, such as the patient's demand for pharmacists' services and the lack of collaboration with prescribers (Factor 4) (Table 3). In total, 55.7%, 57.7%, 71.6%, and 60.4% of the pharmacists perceived Factors 1, 2, 3, and 4 as barriers, respectively. The Cronbach's alpha for Factors 1, 2, and 3 were over 0.8, indicating good internal consistency for barrier items.[21] However, Factor 4 showed a poor internal consistency (0.59).

Table 2. Pharmaceutical service provision.

Services	Provision		No provision		Total	
	n	%	n	%	n	%
(9 items)						
1. Written medication instruction	168	43.3	220	56.7	388	100.0
2. Hypertension management	244	65.2	130	34.8	374	100.0
3. Diabetes management	247	65.9	128	34.1	375	100.0
4. Asthma management	186	51.1	178	48.9	364	100.0
5. Hyperlipidemia management	222	60.5	145	39.5	367	100.0
6. Depression management	139	39.8	210	60.2	349	100.0
7. Medication history management	201	54.2	170	45.8	371	100.0
8. OTC self-medication review	186	51.4	176	48.6	362	100.0
9. Home visit service for medication management	37	10.5	315	89.5	352	100.0
Classification of respondent as per service provision level						
Inactive provider (< 5 services among the above-listed services)					191	47.7
Active provider (≥ 5 services among the above-listed services)					209	52.3

OTC (over-the-counter)

Table 3. Pharmacist's perceived potential barriers and principal component analysis with eligible components of perceived barriers.

Barriers	Perception as a barrier				Component and factor loading			
	n (%)			Score, mean (SD)				
	Disagree (disagree, strongly disagree)	Neutral	Agree (agree, strongly agree)		Factor 1	Factor 2	Factor 3	Factor 4
Time and workforce-related barrier					*(0.81*)*			
Time constraints	97 (24.5)	127 (32.1)	172 (43.4)	3.29 (1.16)	0.80			
Lack of pharmacist	120 (30.5)	110 (27.7)	166 (41.8)	3.15 (1.22)	0.83			
Lack of non-pharmacist supporting staff	164 (41.6)	124 (31.5)	106 (26.9)	2.76 (1.19)	0.76			
Clinical knowledge and information-related barrier						*(0.80*)*		
Lack of clinical knowledge	159 (40.2)	168 (42.4)	69 (17.4)	2.65 (1.00)		0.73		
No manual for patient management	104 (26.5)	148 (37.7)	141 (35.9)	3.11 (1.10)		0.76		
Lack of patient information	112 (28.5)	155 (39.4)	126 (32.1)	3.01 (1.07)		0.81		
Lack of educational materials	86 (21.8)	150 (38.0)	159 (40.3)	3.23 (1.05)		0.57		
Circumstance-related barrier							*(0.85*)*	
No independent room for patient counseling	108 (27.6)	115 (29.3)	169 (43.1)	3.18 (1.23)			0.53	
Lack of management skill	91 (23.3)	158 (40.5)	141 (36.2)	3.13 (1.01)			0.53	
Lack of networks in a community	91 (23.5)	153 (39.4)	144 (37.1)	3.16 (1.07)			0.67	
Lack of supports by professional society	109 (27.8)	142 (36.2)	141 (36.0)	3.16 (1.16)			0.72	
Lack of reimbursement for services	106 (27.3)	138 (35.6)	144 (37.1)	3.18 (1.19)			0.78	
Lack of legal support	90 (23.0)	136 (34.7)	166 (42.4)	3.33 (1.22)			0.73	
Miscellaneous barrier								*(0.59*)*
Decreased revenue	143 (36.5)	117 (29.9)	132 (33.7)	2.97 (1.26)				0.52
No patient's demand for service provision	146 (37.2)	151 (38.4)	96 (24.4)	2.82 (1.12)				0.73
Lack of collaboration with prescribers	123 (31.1)	105 (26.5)	168 (42.4)	3.20 (1.33)				0.59
No. (%) of respondents perceived barriers for Factor 1, 2, 3 and 4					224 (55.7)	232 (57.7)	288 (71.6)	243 (60.5)

* Cronbach's alpha

Factors affecting pharmaceutical services

The lack of a separate counselling area and clinical knowledge and information-related barriers were identified as factors that affected community pharmacies' ability to provide pharmaceutical services (Table 4). The logistic regression analysis revealed that pharmacists establishing a separate counselling area in their pharmacies are more likely to actively provide pharmaceutical services than are those who do not (OR: 2.116, 95% CI: 1.177-3.802). Further, pharmacists who perceive their clinical knowledge to be lacking are less likely to actively provide pharmaceu-

Table 4. Logistic regression analysis: Factors affecting pharmaceutical service provision.

Variables		OR	95% CI	
Sex (ref: Women)	Men	0.959	0.604	1.521
Age (years old) (ref: 20-30)	40's	0.879	0.456	1.697
	50's	0.831	0.422	1.637
	60+	1.498	0.658	3.412
Location of pharmacy (ref: City area)	Metropolitan area	0.972	0.617	1.532
	Rural area	1.035	0.448	2.388
Medical center near pharmacy (ref: No medical center)	General hospital	0.773	0.274	2.183
	Hospital or 2 and more clinics	0.484	0.177	1.323
	1 clinic	0.692	0.260	1.845
Franchise contracted (ref: No)	Yes	0.721	0.373	1.394
Size of pharmacy (m^2) (ref: > 80)	≤ 40	0.764	0.394	1.480
	> 40 to ≤ 80	0.728	0.415	1.279
Separated counselling space* (ref: No)	Yes	2.116	1.177	3.802
% of prescription drugs contributing to pharmacy income (ref: < 50%)	≥ 50% to < 70%	1.228	0.613	2.459
	≥ 70%	0.636	0.343	1.178
Participation in regular continuing education programs (ref. Not always)	Always	1.174	0.699	1.972
Perceived barrier Factor 1 (ref: Not perceive barrier)	Perceive barrier	1.027	0.645	1.636
Perceived barrier Factor 2* (ref. Not perceive barrier)	Perceive barrier	0.587	0.357	0.965
Perceived barrier Factor 3 (ref: Not perceive barrier)	Perceive barrier	1.011	0.570	1.795
Perceived barrier Factor 4 (ref. Not perceive barrier)	Perceive barrier	1.099	0.671	1.801

Barrier Factor 1: Time and workforce-related barrier; Factor 2: Clinical knowledge and information-related barrier; Factor 3: Circumstance-related barrier; Factor 4: Miscellaneous barrier
*Statistically significant

tical services than are those who do not perceive it to be lacking (OR: 0.587, 95% CI: 0.357-0.965).

DISCUSSION

The findings confirmed that the majority of pharmacies were independent non-franchises, reflecting the present legal policy that permits only licensed pharmacists to practice. The majority of pharmacies were located near medical institutions; this may have reflected their reliance on prescription medication, particularly after the pharmaceutical reform. The average store area is nearly 65 m^2, possibly indicating an upsizing trend. However, several pharmacies did not have a separate, private space for counselling. Longer opening hours for pharmacies run by single pharmacists revealed that the pharmacy is a workplace necessitating a longer workweek to meet societal demands for greater accessibility to medication. The large number of products pharmacies offered and the wide range of non-drug products indicated their efforts to seek business diversification. Several pharmacies were run by single pharmacist, even without any other staff. The presence of such small-scale business operations can be attributed to the small number of prescriptions administered. Since the dispensing fee for prescriptions contributes the largest percentage to the overall pharmacy income, a larger staff may not be financially viable. This financial situation appears to be linked to pharmacists' reluctance to participate in regular continuing education programmes.

According to pharmacists, the most important barriers were lack of legal support and time constraints. These responses directly reflected the strict regulations that limit the medication dispensing responsibility to pharmacists and not technicians. It may also be related to why pharmacists claim time constraints as a reason for failing to provide quality pharmacy services to patients. Pharmacists have previously identified time constraints and shortage of pharmacists as major barriers to providing services.[22,26] Additionally, increased job stress from increased workloads and long work hours for dispensing services have been reported.[27] Effective solutions to this involve improving access to resources and pharmacy technician staffing, especially since the work environment and workload were associated with

performance.[28,29]

Typically, pharmacists value their role in health improvement and are more comfortable with medication-related health improvement work.[30] In the present study, we made participants aware of all possible community pharmacy services, including pharmaceutical care and health services that are now considered core roles due to the greater access patients have to pharmacists over other health professionals. Pharmacists can indeed make a positive contribution to public health in a unique way; however, preventive health care services over dispensing and medication counselling in community pharmacies may be perceived as an infringement on the job roles by other healthcare professionals.[31] This concern was reflected in the high agreement rate for lack of collaboration with prescribers as an external barrier in this study. Nonetheless, considering that internal and external barriers are significantly correlated, both need to be simultaneously addressed to improve pharmacy services.

The factor analysis yielded insufficient clinical knowledge and information as a significant barrier limiting the provision of pharmacy services. Continuous efforts to overcome these challenges are required, such as establishing more flexible regulations that accommodate social changes, widening access to more resources, and facilitating mutual agreements between professionals for effective collaboration of patient care.

On the other hand, pharmacists' awareness of extended pharmacy services should be increased by strengthening their identities, and can be accelerated through multi-pronged channels such as diverse educational programs and professional leadership. The International Pharmaceutical Federation recommends that national pharmacy professional associations collaborate with governing bodies and other healthcare associations to support pharmacists by offering continuing professional development activities, including distance-learning programs, and establishing national objectives and standards for pharmacy services and practice.[1] Community pharmacists are not passive provider in the healthcare system, merely dispensing medications prescribed by physicians; rather, with the changes in the healthcare environment and the introduction of managed-care approaches, pharmacists are required to adopt functions such as health promotion and outreach services, in addition to pharmaceutical care services, to meet societal needs.[32]

Not all the services presented in the questionnaires were necessarily available in Korea, because the range of permissible pharmacy services depends on the country's healthcare system. Health services are particularly sensitive to changes due to the segregation of professional functions, even though community pharmacists, as first-contact primary healthcare professionals, are in a position to facilitate self-care.[33] Furthermore, the provision of health related services goes beyond the supply of medication in rural pharmacies where other sources for these services are lacking.[22]

The current pharmacist's patient-centred focus is on prevention, wellness, and continued care. Hence, pharmacists need to develop new skills and competencies to adapt to the rapidly changing healthcare environment. High-quality, cost-effective care that is responsive to patient needs and preferences, in addition to safe and appropriate medication, is gaining importance. This transformation in the pharmacy profession to meet societal needs is global.[34] Basic attempts to adapt, such as the 6-year pharmacy school curriculum recently launched in South Korea, are crucial to facilitating changes, but need to extend to pharmacy practices. Without identifying both the internal and external barriers, incumbent pharmacists prepared for changes though the 6-year program would find it challenging to effectively meet pharmacy practice demands. Our findings can help educational institutions and professional societies develop programs for the practical application of pharmacy services.

Limitations

Our study has a few limitations. First, this study was confined to a limited number of community pharmacists recruited from participants in a conference and a training programme, and a random sampling method was not employed. The findings have not been obtained from a representative sample, and may have skewed the results; for example, most participants owned pharmacies in metropolitan areas. Thus, it may not generalize this study's findings to community pharmacists nationwide. Second, some of the wide range of potential pharmacy services of community pharmacies listed in the questionnaire were uncommon in South Korea. This might make a confusion about the service itself, leading to imprecise judgements about barriers. Furthermore, although the itemized potential barriers used in questionnaire were validated by professional experts and through a pilot study, there may exist other barriers we did not identify in the development stage.

CONCLUSION

Despite the aforementioned limitations, this survey allows us to address areas for change within community pharmacies to enhance the pharmacist's role and value in society, by investigating the current status of community pharmacies and identifying factors influencing the active provision of community pharmacy services. At present, we require well-designed strategies to overcome the major barriers (e.g., the lack of regulatory support and time constraints) identified in this survey. It is necessary to con-

duct further research aimed at defining practical solutions by implementing model programs designed to overcome these barriers and evaluating their effectiveness. This will ultimately help achieve better community health outcomes for communities across South Korea.

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