ความเข้าใจด้านยาของผู้ป่วยศัลยกรรมทางเดินปัสสาวะ
Medication Understanding among Urinary Tract Surgical Patients

นิพนธ์ต้นฉบับ

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วารสารไทยเภสัชศาสตร์และวิทยาการสุขภาพ2565;17(2):183-189.

Original Article

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Thai Pharmaceutical and Health Science Journal 2022;17(2):183-189.

บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาระดับของความเข้าใจด้านยาของผู้ป่วยศัลยกรรมทางเดินปัสสาวะ และความสัมพันธ์ระหว่างระดับความเข้าใจด้านยากับปัจจัยส่วนบุคคลและปัจจัยเสริม **วิธีการศึกษา:** การศึกษาภาคตัดขวางมีกลุ่มตัวอย่างคือผู้ป่วยนอกแผนกศัลยกรรมทางเดินปัสสาวะ โรงพยาบาลสมเด็จพระเจ้าตากสินมหาราช จังหวัดตาก ที่ได้รับการวินิจฉัยว่าเป็นโรคนิ่ว ต่อมลูกหมากโต ภาวะพร่องฮอร์โมนเพศชาย และกระเพาะปัสสาวะบีบตัวไวเกิน ได้รับยาชนิดรับประทานต่อเนื่องอย่างน้อย 1 เดือน เก็บข้อมูลโดยใช้แบบสัมภาษณ์กลุ่มตัวอย่างจำนวน 292 คน แบบประเมินความเข้าใจด้านยา (medication understanding) สำหรับยาแต่ละรายการนั้น ให้คนไข้ระบุ 1) ชื่อยา 2) ข้อบ่งใช้ 3) ขนาดยา และ 4) ความถี่ โดยให้ 1 คะแนนสำหรับแต่ละคำตอบที่ถูกต้อง คะแนนรวมสำหรับยาแต่ละรายการ คือ 4 คะแนน คำนวณคะแนนเฉลี่ยโดยหารคะแนนรวมด้วยจำนวนรายการยา ใช้สถิติเชิงพรรณนาเพื่ออธิบายข้อมูลทั่วไปและระดับความเข้าใจด้านยา ทดสอบความสัมพันธ์ระหว่างระดับความเข้าใจด้านยากับปัจจัยส่วนบุคคลและปัจจัยเสริมโดยใช้สถิติถดถอยพหุลอจิสติก **ผลการศึกษา:** ตัวอย่างส่วนใหญ่มีความเข้าใจด้านยาเฉลี่ยในระดับพอใช้ (คะแนนเฉลี่ย 2.69 คะแนน) โดยมีร้อยละ 63.0 ที่อยู่ระดับดี และร้อยละ 37.0 อยู่ระดับพอใช้ พบว่าส่วนมากระบุความถี่ ขนาดยา และข้อบ่งใช้ได้ถูกต้อง (ร้อยละ 97.60, 88.01 และ 80.48 ตามลำดับ) แต่มีเพียงร้อยละ 2.74 ที่ระบุชื่อยาได้ พบว่าการไม่มีผู้ดูแลเตรียมให้ยา กับการมีจำนวนชนิดยาน้อยสัมพันธ์กับระดับความเข้าใจด้านยาระดับดีอย่างมีนัยสำคัญทางสถิติ (*P*-value < 0.05) **สรุป:** ผู้ป่วยที่ใช้ยาระบบทางเดินปัสสาวะมีความเข้าใจด้านยาระดับพอใช้โดยเฉลี่ย โดยส่วนมากระบุความถี่ ขนาดยา และข้อบ่งใช้ของยาได้ แต่บอกชื่อยาไม่ได้ เภสัชกรและบุคลากรทางการแพทย์ที่เกี่ยวข้องควรหาแนวทางสื่อสารให้ผู้ป่วยเห็นความสำคัญและตระหนักถึงความจำเป็นที่ผู้ป่วยต้องทราบชื่อยาที่รับประทาน เพื่อป้องกันไม่ให้เกิดปัญหาการได้รับยาซ้ำซ้อน

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Editorial note
Manuscript received in original form: July 24, 2021;
Revised: August 16, 2021;
Accepted in final form: December 29, 2021;
Published online: June 30, 2022.

Abstract

Objectives: To determine levels of medication understanding among urinary tract surgical patients and relationships between medication understanding and demographic characteristics and reinforcing factors. **Methods:** In this cross-sectional study, patients receiving care at the Department of Urinary Tract Surgery, Somdejphrajaotaksin Maharaj Hospital, Tak province, Thailand were recruited. They were diagnosed with urinary tract stones, benign prostatic hyperplasia, androgen deficiency, or overactive bladder, and prescribed with medications for urological diseases for at least one month. 292 patients were tested for medication understanding with four questions for each urological medication: name, indication, dosage, and frequency. One point was given for each correct answer. With the total of 4 points for a given medication, an average score for each patient was the total sum score divided by the number of medications. Descriptive statistics were used to present demographic characteristics and levels of medication understanding. Associations between medication understanding and demographic characteristics and reinforcing factors were tested using multiple logistic regression. **Results:** Most participants had an average level of medication understanding (mean = 2.69 points) with 63.3% and 37.05% with good and fair level, respectively. Most participants stated frequency, dosage and indication of the medication correctly (97.60%, 88.01% and 80.48%, respectively), while only 2.74% stated the name correctly. Having no caregivers to help administer medications and fewer medication items were significantly associated with good level of medication understanding (*P*-value < 0.05). **Conclusion:** Patients using medications for urological diseases had a fair level of medication understanding. They were able to state frequency, dosage and indication, but not the name of the medication correctly. Pharmacists and medical staff could find ways to communicate with patients to raise their awareness of knowing drug names to prevent drug duplication.

Keywords: medication understanding, urinary tract surgery, outpatient

Journal website: http://ejournals.swu.ac.th/index.php/pharm/index

Introduction

In the present, a considerable number of patients with non-communicable diseases and elderly patients using poly-pharmacy are more prone to be harmed from medication use than their younger counterparts.[1] Even though current medications are more effective in the treatment of diseases, patients may not receive full benefits from medication. The reason lies in the fact that most of them do not take medications as prescribed, e.g. increasing or decreasing the dosage by themselves. As a result, their medication adherence declines[2], and this poses greater risks of harm from medication use.[3] In addition, it may contribute to more severe consequences; if antibiotics are used, antimicrobial resistance may occur, leading to higher medical expenses.[4] Indirect effects arising from patients' medication non-adherence may cause medication errors; for example, if patients do not strictly comply with doctors' instructions or use

medications improperly, their non-compliance may result in doctors' misdiagnosis and prescription errors.

The results of prior research showed three factors causing patients' medication non-adherence.[5] As the first factor, patient factors include a lack of knowledge about diseases and medications, and non-involvement in decision making regarding treatment. Prescriber's factors, as the second factor, are complicate drug regimens, a lack of or incomplete communication about side-effects of medications, and prescriptions from multiple doctors which could pose the risk of drug duplication. For the last factors, healthcare system factors refer to a limited time of treatment for each patient and a shortage of modern health information technology.[5]

A review of literature indicates that many studies have investigated factors affecting medication adherence and promotion of treatment adherence through medical staff's interventions. There has been an intervention to establish rapport with patients to enable their involvement in treatment planning.[6] There have been recommendations on proper use of medications and drug storage.[7] Guidelines to prevent patients from forgetting to take medications has been proposed.[8]

There have been few studies on factors affecting medication understanding in Thailand. Most studies were carried out in foreign countries, and their findings revealed that education level and the prescribed dosage affected patients' perceptions of medications and medication understanding.[9,10] Many studies on medication understanding have been about chronic diseases of endocrinological and cardiovascular systems, but not urological diseases. Poor understanding on medications for urologic diseases could defect medication adherence and therapeutic outcomes like other chronic diseases. Based on 2020 data of Somdejphrajaotaksin Maharaj 60% of 960 patients with urological disorders were the elderly. Their most common urological diseases were urinary tract stones, benign prostatic hyperplasia (BPH), androgen deficiency, and overactive bladder (OAB), all of which are chronic diseases requiring the continuous use of medications. Their five most common comorbidities were hypertension, constipation, diabetes, hyperlipidemia, and chronic kidney disease.

Additionally, given that most patients are elderly, various aspects of their physical conditions have declined due to aging, such as mobility, vision, and memory, which obstructs perception and medication understanding. Improper use of medications will trigger medication non-adherence. As they live with many health problems, they are required to use various types of medications, thus leaving them prone to side effects or detrimental effects from medications. These adverse drug events also lead to non-adherence. Moreover, based on the observation of prescription adherence, it was found that they had difficulty using medications. Some of them had no understanding of the medications they were taking. With the concern on chance of misunderstanding on and incorrect use of medications among this group of elderly patients with urological diseases with a large number of medications prescribed, there is a need to determine level of their medication understanding and factors which could influence such mishaps.

The present study aimed to investigate levels of medication understanding and the relationship between demographic characteristics and reinforcing factors with levels of medication understanding. Specifically, levels of medication understanding were hypothesized to be associated with (1) demographic characteristics, including gender, age, marital status, education, occupation, monthly income, and medical rights affect levels of medication understanding, and (2) reinforcing factors, namely medication aides, duration of disease, comorbidities, amount of medications taken, use of dietary supplements/ herbs, use of medications from other hospitals, and side-effects/adverse drug reactions.

Methods

The present study applied quantitative cross-sectional design and collected data through interviews from May 2020 to March 2021. It obtained ethical approval in the form of Accreditation No. HE632219 from the Human Research Ethics Committee of Khon Kaen University on September 29, 2020.

Population and sample

The population of this study was 960 outpatients of the urinary tract surgery clinic at Somdejphrajaotaksin Maharaj Hospital, Tak province, who received services between October 2020 and March 2021. The sample size was determined based on Krejcie and Morgan's formula.[11] With unknow proportion of people with acceptable and poor level of medication understanding, we proposed a conservative approach of the proportion of 0.5 for sample size estimation.

With a sampling error or 5% and a type I error of 5%, a sample of 275 participants was needed.

The criteria for participant eligibility were as follows. They were 18 years old or older, diagnosed with urinary tract stones, benign prostatic hyperplasia, androgen deficiency, and/or overactive bladder, and administered with one or more continuous medications for the treatment of urinary tract stones, benign prostatic hyperplasia, androgen deficiency, and/or overactive bladder. We exclyded patients who were unable to communicate in Thai, diagnosed as a critical case, constantly supervised by medication aides, or refusing to participate in this research. The participants were selected through convenience sampling.

Research instruments development and validation

The instrument was a two-part questionnaire. The first part consisted of two sections. The first section collected demographic characteristics of participantcs including gender, age, comorbidities, numbers of medications used to treat urological diseases, and numbers of medications used to treat comorbidities. The second section collected clinical characteristics which were reinforcing factors including caregivers to help administering medications, duration of urinary tract disease, marital status, education, monthly income, medical rights, use of dietary supplements/herbs, use of medications from other hospitals, and side-effects/adverse drug reactions.

Part two was the Medication Understanding Questionnaire (MUQ) which was granted permission for translation and adaptation from the original English version of of Marvanova and colleagues.[10] Backtranslation was done by three experts, including one doctor at the urinary tract surgical clinic and two professional nurses at the clinic. As guided by the MUQ, "medication understanding" on indication, strength (mg per tablet or capsule), units (number of tablets or capsules taken at a time), frequency (number of administration times per day)[10], our study modified components of the MUQ with permission from the owner to medication's name (either generic or brand name), indication, dosage (how many tablets or capsules taken at a time), and daily frequency. For each of all medications for urological diseases of a given participant, the researcher asked the participant to state the name of the medication (either generic or trade name), state the indication or purpose of the medication, specify how many tablets/capsules each time the participant need to take the medication, and specify how many times a day the participant need to take the medication. These questions were repeated for each of all medications for urological diseases.

For each correct answer on medication name, indication, dosage, and daily frequency of medication, a score of one point was given; otherwise a zero point was given for incorrect or no answers. For a given patient, their total score was the sum of scores from all medications asked divided by the number of the medications with a possible total score of 0 – 4 points.

In the original work of MUQ of Marvanova and colleagues, a median of 2.5 points of the possible total of 4 points (interquarter range of 2.2 – 2.8) was found.[10] In our effort to categorize medication understanding scores into two levels we adapted the median of 2.5 points from Marvanova and colleagues.[10] However, we chose the cut-off score of 3 points (3 to 4 points) to be considered good understanding and lower than 3 points as fair understanding. A cut-off value of 3 out of 4 points (75%) could better represent cognitive level of the elderly population than higher cut-off levels, for example, 80% or 90%.

Research instruments were validated in terms of content validity and language appropriateness by three experts, namely a thesis advisor, a doctor, and a professional nurse at the urinary tract surgical clinic. The instruments were revised based on comments from the consulted experts prior to implementation.

Data collection procedure

The researcher approached the doctor and the nurse at the urinary tract surgical clinic to explain the objectives and the benefits of the study as well as to ask for their collaboration in collecting the data during the patient waiting time from 7 a.m. to 8.30 a.m. The participants were informed about objective and process of the study. With the voluntary nature of the study, they were informed that their decision not to participate in the study and to withdraw from the study at anytime would not affect the care they received. Their information would be kept secret and only summary data, not individual patient data, were to be presented and published. Once written informed consent was obtained, the researcher started the interview by asking the participant each question and wrote down the answer obtained from the participant. The interview took approximately 15 minutes for each patient.

Data analysis

Descriptive statistics including frequency with percentage and mean with standard deviation were used to present demographic charateristics, reinforcing factors and medication understanding scores of the participants. Associations between level of medication understanding (i.e., good and fair levels) with demographic charateristics and reinforcing factors were tested using multiple logistic regression analysis. The likelihood to achieve good level of medication undersatanding was presented as adjusted odds ratio (adj. OR) with 95% confidence interval (CI). Statistical significanc was set at a type I error of 5% (or *P*-value < 0.05). All statistical analysies were conducted using the SPSS software version 22.0.

Results

The results showed that the majority of participants were male (83.2%) and above 60 years old (69.5%), with an average age of all participants of 65.20 ± 10.93 years (Table 1). A good share of them were married (76.7%), completed primary education (64.7%), worked as agricultural farmers, house makers, or unemployed (57.9%), had a monthly income below 5,000 baht (55.5%), and had the universal health coverage as their healthcare payment scheme (65.8%). In regard to health, it was found that the majority of them did not have medication aides (96.9%) and suffered from urological diseases for 5.34 ± 3.96 years. The two most common urological diseases were benign prostatic hyperplasia or BPH (67.1%) and urinary tract stones (40.8%), while the two most common comorbidities included hypertension (55.5%) and dyslipidemia (34.9%). Most of the participants used one to two medications for urological diseases (92.8%) and one to five medications for comorbidities (63.7%). They did not use dietary supplements or herbs (80.5%), nor did they experience side-effects or adverse drug reactions (96.2%) (Table 1).

Levels of medication understanding

About two-thirds of participants had a good level of mediation understanding (63.0%). Their average score was in a fair level (mean = 2.69 ± 0.51 points) (Table 2).

Table 1 Demographic and clinical characteristics of participants (N = 292).

Characteristics	N (%)
Gender	
Men	246 (83.2)
Women	49 (16.8)
Age (yrs)	
Mean ± SD	65 ± 10.93
Range: min - max	25 – 94
Age group	
18 – 30	3 (1.0)
31 – 60	86 (29.5)
61 or older	203 (69.5)
Marital status	
Single	29 (9.9)
Married	224 (76.7)
Divorced/widowed	39 (13.4)
Education	
Primary education	189 (64.7)
Secondary education/diploma	64 (21.9)
Bachelor's degree or higher	34 (11.6)
No schooling	5 (1.7)
Occupations	
Government official/ state enterprise employee	52 (17.8)
Company employee/ regular employee	32 (11.0)
Agricultural farmer/ housemaker/ unemployed	169 (57.9)
Self-employed/ merchant	36 (12.3)
Monk	3 (1.0)
Monthly incomes (Baht)	
< 5,000	162 (55.5)
5,000 - 10,000	57 (19.5)
> 10,000	73 (25.0)
Healthcare payment scheme	
Universal coverage scheme	192 (65.8)
Government officials/ local welfare scheme	87 (29.8)
Social insurance scheme	13 (4.5)
Durations of urological diseases (yrs)	
Mean ± SD	5.34 ± 3.96
Durations of urological diseases, group	
≤ 1.00	41 (14.0)
1.01 - 10.00	209 (71.6)
> 10.00	42 (14.4)
Having medication givers	
None	283 (96.9)
Sometimes	9 (3.1)
Urological diseases	
BPH	196 (67.1)
Urinary tract stones	119 (40.8)
Overactive bladder	38 (13.0)
Androgen deficiency	4 (1.4)
Having comorbidities	
Yes	257 (88.0)
No	35 (12.0)
Comorbidities	
Hypertension	162 (55.5)
Diabetes	47 (16.1)
Dyslipidemias	102 (34.9)
Constipation	46 (15.8)
Gout/hyperuricemia	39 (13.4)
Orthopedic diseases	34 (11.6)
CKD	32 (11.0)
Others	134 (46.0)
No. of medications used in urological diseases	
1	163 (55.8)
2	108 (37.0)
3 or more	21 (7.2)
No. of medications used for comorbidities	
Mean ± SD	3.0 ± 2.81
Range: min – max	0 – 16
None	54 (18.5)
1 - 5	186 (63.7)
6 - 10	46 (15.8)
11 or more	6 (2.1)
Use of dietary supplements/herbs	
No	235 (80.5)
Yes	57 (19.5)
Use of medications from other hospitals	
No	235 (80.5)
Yes	57 (19.5)
Experiencing side effects/adverse drug reactions	
No	281 (96.2)
Yes	11 (3.8)

Table 2 Levels of medication understanding of the participants (N = 292).

Scores	N (%)
Average score (points), mean ± SD (possible range: 0 – 4)	2.69 ± 0.51
Level of medication understanding	
< 3.0 points (fair)	108 (37.0)
3.0 - 4.0 points (good)	184 (63.0)

Question with the most correct answer was frequency of medications (97.60%), followed by dosage at a time (88.01%) and indication (80.48%). Unsurprisingly, a very small number of participants could state the name the the medication correctly (2.74%) (Table 3).

Table 3 Proportions of participants with correct answer for each of the four medication understanding questions (N = 292).

Questions	N (%)
No. 1) Please state the names of this medication (either generic or trande name).	
Correct name	8 (2.74)
Incorrect name or no answer	284 (97.26)
No. 2) Please state the indication or purpose of this medication	
Correct indication.	235 (80.48)
Incorrect indication or no answer	57 (19.52)
No. 3) Please specify how many tablets/capsules each time you need to take this medication.	
Correct dosage	257 (88.01)
Incorrect dosage or no answer	35 (11.97)
No. 4) Please specify how many times a day you need to take this medication.	
Correct frequency	285 (97.60)
Incorrect frequency or no answer	7 (2.40)

Relationships between relevant factors with levels of medication understanding

It was found that none of demographic characteristics were related to levels of medication understanding (Table 4). However, reinforcing factors including not having caregivers to administer medications was significantly associated with having a good level of medication understanding (*P*-value = 0.021). While 22.2% of participants with the help of caregivers achieved a good level of medication understanding, as high as 64.3% of those with no help achieved the good level (adj. OR = 7.14, 95% CI = 1.34 - 38.07).

It was also found that the more the medication items the participants took, the less likely they achieved good level of medication understanding. While 73.6 % of participants who took only one medication item achieved the good level, 51.9% and 38.1% of those who took 2 items and 3 or more items achieved such good level. Compared with those taking only one medication item, participants taking 2 and 3 ore more items were significantly less likely to achieve the good level of medication understanding (adj. OR = 0.30, 95% CI = 0.17-0.54, *P*-value < 0.001, and adj. OR = 0.16, 95% CI = 0.06 - 0.42, *P*-value < 0.001, respectively) (Table 4).

Table 4 Relationships between medication understanding (MU) and various factors (N = 292).

Factors	N (%)		Adj. OR	95% CI	*P*-value*
	MU < 3.0 points (n = 108)	MU 3.0 - 4.0 points (n = 184)			
Gender					
Men	86 (35.4)	157 (64.5)	1.00†		
Women	22 (44.9)	27 (55.1)	0.50	0.25 - 1.02	0.056
Age (yrs)					
≤ 60yrs	35 (43.8)	47 (58.8)	1.00†		
> 60yrs	73 (34.4)	139 (65.6)	1.54	0.83 - 2.85	0.173
Occupations					
Government official/state enterprise employee	13 (25.0)	39 (75.0)	1.00†		
Company employee/regular employee/worker	16 (50.0)	16 (50.0)	0.39	0.14 - 1.09	0.074
Agricultural farmer/homemaker/unemployed/monk	65 (37.8)	107 (62.2)	0.70	0.32 - 1.51	0.364
Self-employed/merchant	14 (38.9)	22(61.1)	0.53	0.20 - 1.42	0.208
Having caregivers to administer medications					
No	101 (35.7)	182 (64.3)	7.14	1.34 - 38.07	0.021
Sometimes	7 (77.8)	2 (22.2)	1.00†		
Having comorbidities					
Yes	93 (36.2)	164 (63.8)	1.32	0.60 - 2.71	0.507
No	15 (42.9)	20 (57.1)	1.00†		
Number of medications used for urological diseases					
1	43 (26.4)	120 (73.6)	1.00†		
2	52 (48.1)	56 (51.9)	0.30	0.17 - 0.54	< 0.001
3 or more	13 (61.9)	8 (38.1)	0.16	0.06 - 0.42	< 0.001
Use of dietary supplements/herbs					
Yes	16 (28.1)	41 (71.9)	1.50	0.75 - 3.01	0.256
No	92 (39.1)	143 (60.9)	1.00†		
Experiencing side-effects/adverse drug reactions					
Yes	6 (54.5)	5 (45.5)	0.39	0.11 - 1.45	0.160
No	102 (36.3)	179 (63.7)	1.00†		

† Reference group.

* Multiple logistic regression.

Discussions and Conclusion

Regarding their common characteristics, the majority of the participants were male. Their average age was 65.20 old. The two most common urological diseases were benign prostatic hyperplasia (67.1%) and urinary tract stones (40.8%). These findings matches those in the report of the Thai Urological Association under the Royal Patronage in 2015, which found that benign prostatic hyperplasia was common in elderly male individuals and that the incidence of benign prostatic hyperplasia and urinary tract stones was associated with aging.[12,13] In addition, a considerable number of participants (96.9%) prepared medications themselves without assistance from caregivers. This finding is also consistent with the study on medication use behavior of elderly patients living with chronic diseases, which found that up to 85.48% of the patients prepared medications by themselves.[14] Many of the participants (88%) had comorbidities; this is in line with the report on the elderly in Thailand from 2016 which showed that 36.8% of elderly male individuals and 42.3% of elderly female individuals had more than two chronic diseases or congenital disease.[15]

The results show that demographic characteristics had no significant relationship with levels of medication understanding. On the contrary, the reinforcing factors of having caregivers to administer medications and the number of medications taken were significantly related to levels of medication understanding.

In fact, the patients without caregivers to give medications had a higher level of medication understanding than those assisted by the caregivers. A possible explanation for this may lie in the fact that those without assistance from caregivers need to prepare medications by themselves, so they must understand medications to a higher degree than those occasionally helped by the caregivers. Moreover, those using two medication and three medications or more had a lower level of medication understanding than those using one medication. This finding corresponds to the results of prior research which showed that increasing numbers of medications led to a decline in medication understanding.[10] Irrespective of that, in practice, patients living with chronic diseases typically are administered more than one medication, which may influence their medication understanding. Future research should investigate this issue since this factor may potentially influence medication adherence.

Question with the most correct answer was frequency of medications (97.60%), followed by dosage at a time (88.01%) and indication (80.48%). Unsurprisingly, a very small number of participants could state the name the the medication correctly (2.74%)

Additionally, the results revealed that the participants had a fair level of medication understanding with an average score of 2.69 out of 4 points. About two-thirds had good level of medication understanding (63.0%) while the rest 37.0% had a fair level. Most of them were unable to state the names of medications (97.26%) but managed to describe indication (80.48%), prescribed dosage (88.01%), and the frequency of the medications (97.60%).

Based on the interviews with the participants, it was found that the causes could be stemmed from two sources. First, the patient understanding on medications could be affected by illiteracy and inability to see characters clearly, and unawareness of the necessity of knowing medication names. Second, drug names on the labels were usuall written in English and, for Thai written names, the text size was too small. Concerned medical staff should pay attention to this issue; in particular, information on medicine labels should be adjusted to fit the context of patients, especially those living with chronic diseases.

Based on our findings, certain recommendations could be made. Medical staff should seek ways to communicate with patients to raise their awareness of the necessity of knowing medication names in addition to indication, dosage, and frequency of medications to prevent drug duplication, drug interactions, or drug-food interactions. As reflected by the results, only 2.74% of the participants were able to state medication names, so further studies should investigate the reasons why patients are unable to state drug names. In addition, qualitative studies should be carried out to examine factors influencing patients' medication understanding. Relationships between medication understanding and medication adherence should also be quantitatively and qualitatively investigated.

The problem of a very small number of participants able to state the name of the medication correctly was of great concern for drug-drug interaction and drug-food interaction. The most problematic medications for this group of patients included doxazocin, finasteride, Mixt. potassium citrate, Mixt. sodium-potassiumcitrate, and alfuzocin which have potential for serious drug interactions with other medications.[16,17] Doxazocin adnd alfuzocin could potentiate orthostatic hypotension with common antihypertensive medications, sildenafil, levodopa, alcohol, and cannabis.[18,19] Alfuzocin is metabolized via cytochrome P3A4 therefore it is contra-indicated with ketoconazole, itraconazole, and ritonavir, and in patient with hepatic impairment.[20] Finasteride is cautioned with the use of alcohol and cannabis because of potentiated drowsiness which could lead to vehicle accidents ad falls.[21] The use of Mixt. sodium-potassium citrate and Mixt. potassium citrate should be cautious since they contain sodium and potassium which should be restrictedly monitored in this group of patients. Many foods and medications containing a large amount of potassium and sodium should be avoided. In addition, certain medications such as ACE inhibitors, ARBs and diuretics (amiloride, spironolactone, and triamterene) which could elevate the potassium level should also be used with caution. Citrate salt could also increase the risk of digoxin toxicity and decrease effect of aspirin.[22]

This study had certain limitations. Given this hospital serving a rural province, a relatively large number of participants had only primary school eduction. Their ability to learn name and indication of the medications could be limited.

Generalization to certain hospitals with cares for urological diseases but with different demographic make-up, especially those in the urban provinces, could be somewhat limited.

In conclusion, about two-thirds of the patients had a good level of understanding on medications for urological diseases. Most of them could not state the medication names, but could speficiy indication, dosage and frequency. Having no caregivers to help administer the medication and fewer number of medications were associated with higher understanding on medications.

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