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PATIENTS' SELF EFFICACY WITH MEDICATION USAGE AND UNDERSTANDING OF PRESCRIPTION ABBREVIATIONS

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Abstract:

Patients do share part of the blame of medication errors and this stems from their inability to effectively adhere to instructions on the use of medicines and inaccurate self-interpretation of prescriptions. This study assessed the patients' self-reported efficacy in their medication usage and their ability to understand and interpret common prescription terms in the absence of a pharmacist. The Medication Usage Self-Efficacy (MUSE) questionnaire was used to evaluate the patients' self –efficacy with their medication. Knowledge of prescription terms was evaluated using eight most commonly used prescription terms in hospital setting. After ethical approval was granted, outpatients visiting two nearby hospitals in the region were approached to complete the survey. Completed questionnaires were subjected to statistical analysis and study findings reported. Four hundred and twelve patients completed the survey. Majority of the patients were females (60.2 %) and were aged less than 40 years (62.2 %). Patients exhibited very good self-efficacy with their medication usage (mean score of 3.15 of 4.00). Knowledge of prescription terms was generally below average among these patients. Percentage of correct responses to Latinized prescription terms were 68.0 % (highest) and 27.4 % (lowest) for Intramuscular (IM) and every day (QD) respectively. Mean difference analysis showed that only young age (< 30 years) was significantly associated with better self-efficacy of medication usage ($p < 0.05$) and patients from urban hospital were significantly knowledgeable than there rural counterparts (54.8% vs. 43.7%, $p < 0.05$). Patients showed above average self-efficacy in the usage of their medications but exhibited generally poor knowledge in understanding prescription terms. This could pose a problem in the absence of a Pharmacist as these patients might seek to purchase their drugs from the local chemists and medicine vendors who might not be able to properly interpret the prescriptions.

Keywords: *Prescription; medication usage self-efficacy (MUSE); medication error; self-efficacy.*

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INTRODUCTION:

Irrational use of medicines has become a global problem. Thus, with substantial and increasing medication use comes a growing risk of harm to patients [1]. Different approaches could be used in the classification of medication errors [2, 3]. One of such approaches is based on the classification of the stage in the sequence of medication use process such as prescribing, dispensing, administration and monitoring. The second approach is based on the type of errors occurring such as wrong medication, dose, frequency, administration route or patients. Undesirable outcomes associated with medication errors include adverse drug reactions, drug-drug interactions, lack of efficacy, poor quality of life and patient experience [4]. Some of the factors associated with health care professionals that may influence medication errors are lack of therapeutic training, inadequate drug knowledge and experience, inadequate knowledge of the patient, physical and emotional health issues, and poor communication between health care professional and with patients [5]. Reducing medication errors and improving medication safety requires a system approach. Some of the strategies that could be employed are educating primary care providers about common causes of medication errors; providing simple tools to assist primary care providers in safe medication, prescribing and use process, and considering how patients can be actively involved in medicine management. Patients frequently misunderstand common instructions and warnings that accompany prescription drugs, resulting in unintentional misuse and potentially adverse drug events. [6, 7]. This should not come as a surprise, as prescription labels may provide seemingly simple, but often unclear directions that are confusing to the majority of patients. The Institute of Medicine (IOM), in its 2000 report "Standardizing medication labels" recognized the need for setting standards within prescribing and dispensing practices to promote safe and accurate medication use for patients [8].

Poor understanding of prescriptions and difficulty in reading labels is not uncommon and may lead to an adverse drug event (ADE). ADEs or drug related injuries account for a large number of hospital admissions annually [9, 10]. These adverse events can occur in both in-patients and out-patients. A number of factors can contribute to drug related adverse events, the lack of basic health literacy being one of them [11]. In addition, complex instructions and distracting drug labels also contribute to the misinterpretation of medical prescriptions and to possible drug related adverse events.

Self-efficacy, or one's beliefs in one's ability to successfully execute a behavior required to produce a certain outcome also has been identified as a critical predictor of numerous health behaviors, including medication adherence [10,14]. The ability of a patient to learn and eventually use the medications given to them is critical to the outcomes of their treatment. This self-efficacy is expected to remarkably reduce medication errors and also increase adherence and patient understanding of their disease and its treatment. It is often the duty of the pharmacist to interpret Latinized prescription terms, but due to "undersupply" or "out-of-stock" situation in most hospitals, patients are often required to purchase their drugs at either community pharmacies or patent medicine vendors (PMVS). The competencies of PMVs have always been questioned and it becomes imperative to access patients' knowledge of these terms with a view to educating them to avoid medication errors that could arise during dispensing.
However a few studies conducted by Kenze and colleagues and Davis and colleagues [20, 22] have considered measuring patients' self-reported efficacy in their medication usage and none of such studies to the best of our knowledge has been conducted in Nigeria.

The objective of this study was to evaluate outpatients' self-efficacy with their medication usage and their understanding of prescription abbreviations which they commonly encounter in the hospital.

METHODOLOGY:

Study design and instruments

The study employed a self-completed questionnaire and was designed to be observational and cross sectional in nature.

Study sites

Two hospitals were used for this survey; Enugu State University of Technology Teaching Hospital (ESUTH), a state government owned hospital that serves the cosmopolitan population of Enugu South and Bishop Shanahan Hospital, a missionary hospital that serves the semi urban population of Enugu North.

Study subjects

A convenient sampling method was used to select patients for data collection. Four hundred and twelve (412**)** outpatients were recruited continuously for this study over a two-month period. All the subjects were requested to give their consent prior to their inclusion in the study.

Study questionnaire

The questionnaire was mainly divided into 3 sections: ***Section 1***: Demographic characteristics (Gender, age, educational status, occupation and number of medications). ***Section 2***: This section comprises of the 8-item MUSE (Medication Understanding and Use Self Efficacy) scale. This is a valid and reliable tool measuring self-efficacy of understanding using prescription medication across participants with varying literary levels. This scale differs from existing medication specific self-efficacy scales as it addresses both learning about one's medication and adherence to the prescribed regimen. [20, 21]. The MUSE 8 items were pilot tested for inclusion in the scale and measured on (a 5-point) Likert agree-disagree scale. Four items (1, 6, 7 and 8) were associated with *taking medication* and four items (2, 3, 4 and 5) were associated with *learning about medication*. ***Section 3***: Knowledge of Latinized prescription terms such as TID, BD, IV, PO, IM, QH, OD, QD. Responses to the items were "no", "yes" and "don't know".

Data collection procedure

Patients who gave their consent on request were recruited for this study. Questionnaires were collected and checked for completeness. Only the completed filled questionnaires were coded and used for analysis. The incomplete questionnaires, i.e. with less than 75% of the items completed, were discarded.

Data analysis

After collecting the questionnaire, the survey responses were given codes and entered into Microsoft Excel spreadsheet (2017) version. Then all the coded and grouped data were transferred to SPSS (Statistical Package for Social Sciences) version 20. Descriptive statistics were calculated for each variable such as frequency of knowledge score and mean MUSE score. The knowledge of prescription terms was categorized into poor knowledge (score of 0-4) and good knowledge (score of 5-9), based on a median score of 4. Patients' factors affecting the MUSE score was analyzed using independent sample t-test for two groups and ANOVA (Analysis of variance) was used for more than two groups. The knowledge score was analyzed using the chi-square. All significance was reported at P-value of ≤ 0.05.

Ethical protocol approval

The study protocol was approved by the Human Subjects Ethics Committee of the Enugu State University of Technology Teaching Hospital, Enugu and Bishop Shanahan Hospital Nsukka Management Board and the research were performed in accordance with ethical standards that had been laid down (ESUTHP/C-MAC/RA/034/132).

RESULTS:

Patient characteristics

Nearly equal proportion of the patients surveyed were from both hospitals; ESUTH 48.3 % and BSH 51.7 %. There were more female patients surveyed and majority of the patients were aged less than 40 years (62.2 %). Majority of the patients were also civil servants and had been educated up to tertiary levels (55.1 %). Patient characteristics are summarized in Table 1.

Patients' self-efficacy with medication usage

Patients surveyed exhibited good self-efficacy with their medication use (mean domain score of 3.28 of 4.00) and learning about medicines (mean domain score of 3.02 of 4.00). Overall MUSE mean score for all 8 items was 3.15 of 4.00. Patients reported poorer self-efficacy in the item "It is easy for me to get all the information I need about my medicine" with a mean score of 2.91 of 4.00. However, all other items were scored higher than 3.00 indicating good self-efficacy for the other items. Interestingly, one item assessing "It is easy for me to take my medicines every day", an adherence type question, was scored highest at 3.41 of 4.00. A summary of the MUSE results can be seen in Table 2.

Table 1: Socio-demographic characteristics of patients' participating in the knowledge (N=412)

Characteristics	N	%
Hospital		
ESUTH, Parklane Enugu	199	48.3
BSH, Nsukka	213	51.7
Gender		
Male	164	39.8
Female	248	60.2
Age		
Less than 30 years	114	27.7
31-40 years	142	34.5
41-50 years	113	27.4
More than 50 years	43	10.4
Education		
Primary/Secondary	185	44.9
University/Polytechnic	227	55.1
Occupation		
Professional	88	21.4
Civil servant	156	37.9
Housewife	72	17.5
Retired/Unemployed	96	23.3

Table 2: Patients' responses to the Medication Understanding Self-Efficacy Scale (MUSE-8 item)

MUSE items	**Frequency and percentage responses N, %**					
	Strongly disagree	**Disagree**	**Neither agree or disagree**	**Agree**	**Strongly agree**	**Mean (SD)**
It is easy for me to take my medicine	8 (1.9)	114 (27.7)	92 (22.3)	178 (43.2)	20 (4.9)	3.21 (0.97)
It is easy for me to ask my pharmacist questions about my medicine	21(5.1)	80 (19.4)	165 (40.0)	114 (27.7)	32 (7.8)	3.13 (0.98)
It is easy for me to understand my pharmacist's instructions for my medicine	20 (4.9)	97 (23.5)	169 (41.0)	98 (6.8)	28 (6.8)	3.04 (0.97)
It is easy for me to understand instructions on my medicine envelop	23 (5.6)	104 (25.2)	152 (36.9)	104 (25.2)	29 (7.0)	3.03 (1.01)
It is easy for me to get all the information I need about my medicine	36 (8.7)	101 (24.5)	159 (38.6)	90 (21.8)	25 (6.1)	2.91 (1.03)
It is easy to remember to take all my medicine	11 (2.7)	92 (22.3)	120 (29.1)	162 (39.3)	27 (6.6)	3.25 (0.96)
It is easy to set a schedule to take my medicine each day	11 (2.7)	77 (18.7)	136 (33.1)	157 (38.2)	30 (7.3)	3.29 (0.94)
It is easy for me to take my medicines every day.	12 (2.9)	77 (18.7)	97 (23.6)	180 (43.8)	45 (10.9)	3.41 (1.01)

Overall mean (SD) MUSE-8 score = 3.15 (1.00)

Patients' knowledge of commonly used prescription terms

Overall, only 49 % (n=202) of the surveyed patients had good knowledge, i.e. correctly answered at least 5 knowledge questions. Mean and median responses for all patients were 4.46 and 4.0 respectively. On per question basis, patients surveyed got more than 50 % of incorrect responses in five of the nine questions. Also, none of the prescription terms attracted more than 70 % of correct answers suggesting generally poor responses from the patients. Table 3 presents summary of all patients' responses to each of the knowledge items.

Table 3: Patient's knowledge of commonly used prescription terms

Prescription terms	N (%)	
	Incorrect	Correct
Once daily (OD)	278 (67.5)	134 (32.5)
Every day (QD)	299 (72.6)	113 (27.4)
Three times a day (TID)	168 (40.8)	244 (59.2)
Twice a day (BD)	155 (37.6)	256 (62.1)
Intravenous (IV)	236 (57.3)	176 (42.7)
Through the mouth (PO)	198 (48.2)	213 (51.8)
Intramuscular (IM)	132 (32.0)	280 (68.0)
Five times a week (x 5/7)	221 (53.6)	191 (46.4)
Every hour (QH)	182 (44.2)	230 (55.8)

Patients' characteristics and their influence on self-efficacy and knowledge of prescription of terms

In terms of self-efficacy in medication usage, patients aged less than 30 years were significantly better in their use and understanding of medications compared to other age groups (p=0.003). Regarding, knowledge of prescription terms, patients from the rural hospital (BSH) were less knowledgeable compared to patients from ESUTH (p=0.015). See Table 4.

Table 4: Patient's characteristics, MUSE-8 scores and knowledge of prescription terms.

Patient Factor	MUSE-8, Mean	*P*	Knowledge Correct, %	*p*
Hospital		0.22		**0.015**
ESUTH, Parklane Enugu	3.20		54.8	
BSH, Nsukka	3.12		43.7	
Gender		0.46		0.162
Male	3.13		45.7	
Female	3.17		51.2	
Age		**0.003**		0.57
Less than 30 years	3.35		53.5	
31-40 years	3.09		45.8	
41-50 years	3.08		50.4	
More than 50 years	3.07		44.2	
Education		0.082		0.263
Primary/Secondary	3.09		47.0	
University/Polytechnic	3.21		50.7	
Occupation		0.727		0.715
Professional	3.08		46.0	
Civil servant	3.17		47.1	
Housewife	3.16		51.4	
Retired/Unemployed	3.19		53.1	

Analysis was conducted by independent sample t-test/ANOVA for MUSE and chi-square for knowledge of prescription terms. Bolded figures represent significant differences at $p < 0.05$

DISCUSSION:

This study sought to evaluate the self-efficacy outpatients possessed regarding their medication usage and their level of knowledge of commonly used Latinized prescription terms in order to forestall medication errors. Findings suggest that while these patients in the two hospitals possessed good self-efficacy towards medication usage, they had poor knowledge of terms they commonly encounter in their prescriptions.

Patients' lack of knowledge regarding prescription terms is an important concern [22]. The consequences of inability of patients' knowledge of their prescription are critical. This study reported an overall poor performance to prescription terms. This is in agreement with an earlier study conducted by Patel and colleagues [23].

Patients surveyed, exhibited good self-efficacy with their medication usage (mean score of 3.15 of 4.00). Understanding the purpose and proper use of medication usage reduces medication errors and improve adherence [24]. According to Ying and colleagues, findings in that study demonstrated lower self-efficacy in learning about prescription medications among patients [21]. Patients surveyed exhibited above average (55 %) self-efficacy with their medication usage, this similar finding has also been reported by Kenze and colleagues [20].

Age has been identified as a factor in the misunderstanding of prescription terms and medication usage [18]. Our result showed that younger patients surveyed (< 30 years) had better understanding of their medication usage compared to the older counterparts. This is in agreement with the works of Patel and colleagues [23], where various aspects of drug usage were better understood by younger patients. Patients from the urban hospital were more knowledgeable than their rural counterpart. This has been previously reported in other study [12]. This can be attributed to the higher likelihood of having more educated persons in the urban hospitals compared to those in the rural hospitals. In the high literacy group, more of the highly trained patients were more knowledgeable on prescription terms when compared to the low literacy group with only primary and secondary training. However, there was no significance difference. This is not in agreement with two studies [15] and [17] that reported that people with high socioeconomic status or higher education level have a better understanding of prescription drugs and drug labels thus leading to lower incidence of adverse drug events (ADEs). The sample of our study was selected from outpatients and authors of previous studies [18] also believed that misinterpretation of prescription drugs and drug label are far more common in ambulatory patients than in hospitalized patients [18]. Most patients in our study had formal education with majority attaining university education. Similarly, in the study conducted by some authors [9, 10] they observed that people with higher educational level have a better understanding of prescription drugs and drug labels thus leading to lower incidence of adverse events. However, in this work, majority of the patients were aged less than 40 years.

Among health care professionals, it is acknowledged that medication error is both indicative of problems in patient centered care and is problematic in itself as it can result in a number of negative consequences for individual patients and add to the burden within the health care system [13, 14]. With the increased adoption of information technology, the use of abbreviations in drug data libraries and computer entry screens will continue to pose a threat to patient safety [15]. A simple risk-versus-benefit analysis of abbreviation use versus prohibition revealed that whereas using abbreviations may save minutes, prohibiting abbreviations may save lives [14].

The consequences of medication errors for patients' safety are critical and they include anaphylactic reactions, respiratory depression and renal failure [16]. The MUSE is a valid and reliable research tool that is used in research and clinical settings in order to assess patients' understanding and use of prescription medication. Dispensing errors are a sub set of medication errors and are errors that occur at any stage during the dispensing process from the receipt of a prescription in the pharmacy through to the supply of a dispensed product to the patient [11]. Contributing factors to prescribing error occurrence include illegible handwriting, inaccurate drug history taking, drug name confusion, inappropriate use of decimal points, use of abbreviations, and use of verbal orders. [14, 15].

Errors in health care are receiving much attention today, although committing such errors is not a new phenomenon. Changing the health care system will help nurses to promote patient welfare, lessen the chance of harm, and reduce the likelihood of medication errors occurring.

These study findings will enable healthcare service providers to enable patients improve their medication self-efficacy and will also influence positively the health care policy. Findings from this study also suggest that although the MUSE has the potential to be a great utility for researchers and clinicians, it is important for caregivers to fill in the communication gap. Providers should adopt a universal approach, ability to use plain language with all patients and try to avoid the use of prescription abbreviations [19].

Limitations of the study

A major limitation of our study is use of two hospitals which hinders the generalizability of our results to other regions. The cross-sectional nature of the design could preclude the ability to rigorously test for predictors of correct vs incorrect understanding of prescription terms. We believe that this study should be done in the south-east geo-political zones of the country for wider coverage.

CONCLUSION:

Patients' self-efficacy with their medication usage and understanding of prescription abbreviations which they commonly encounter in the hospital was evaluated. Patients' surveyed exhibited good self-efficacy with their medication usage. Various aspects of drug usage were better understood by younger patients'. The MUSE scale enabled us to access patients understanding to prescription medication. Results from this study, will enable providers to enhance patients' improvement in their medication self-efficacy and also influence positively the health care policy.

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CONFLICT OF INTEREST

The authors alone are responsible for the content of this research and report no conflict of interest.

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