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Insights into the Nurse's Knowledge and Clinical experience of Polypharmacy in Ajman, UAE

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ABSTRACT

The specter of polypharmacy is an ever-increasing problem. Nurses play a functional role in assisting patients to understand the dangers of polypharmacy. Nurse's knowledge and their experience of polypharmacy in their nursing practice are determined in the study. Nurses working in Gulf Medical College Hospital and Research Centre, Ajman, United Arab Emirates participated in this cross-sectional study (March-May 2011). A Self-administered structured questionnaire was used to obtain data. Chi-square test was performed to find the association between variables under study using PSAW software. A total of 105 nurses participated (92 female nurses; 13 male nurses). The definition of polypharmacy was correctly identified by only 45.7% nurses. 66% identified elderly population as the common age group exposed to polypharmacy; while 22.9% nurses opined that it is common in all age groups. 66.7% of the nurses acknowledge their non awareness of rational and irrational polypharmacy. The common reason for practice of polypharmacy was use of multiple drugs to manage multiple disease conditions. The knowledge of polypharmacy is inadequate among the nurses though they have experience of polypharmacy. Working knowledge of rational polypharmacy is essential among the nursing community to reduce the practice of polypharmacy.

Keywords: Polypharmacy, knowledge, experience, nurses, rational polypharmacy

INTRODUCTION

The specter of polypharmacy is an ever-increasing problem faced by the health care professionals. Polypharmacy is the term often used when multiple medications are prescribed in a patient. Polypharmacy is defined as concomitant use of five or more drugs at the same time in the same patient. Often, the number of drugs prescribed may not be clinically indicated or the total numbers of prescribed drugs clinically indicated are too many resulting in the medication burden (Viktil *et al.*, 2007).

If the risk outweighs the benefits when multiple drugs are prescribed, it accounts for irrational polypharmacy (Greenawalt, 2009 ; Kingsbury *et al.*, 2001).

The negative consequences of prescribing unnecessary and multiple medications include increased occurrence of adverse drug reactions, drug interactions, medication errors. This can also lead to increased hospitalization and therefore increase the hospital costs. In the patients perspective it can result in non adherence to therapy. Polypharmacy is most frequent among the elderly population. Several studies have demonstrated that when older patients and patients with chronic multiple diseases are prescribed more than five medications, often an indicated medication is missing take unnecessary medications (Kuijpers *et al.*, 2008 ; Steinman *et al.*, 2006 ; Stienman *et al.*, 2007).

It is imperative for health care professionals to be aware of what medications are being prescribed and used. Knowledge of the clinical pharmacology of drugs, drug interactions, adverse side effects, and rational use of medications is absolutely necessary. Nurses play a functional role in assisting patients to understand the risk associated with polypharmacy. Nurses, through their knowledge and effort, can aid patients and physicians to reduce the practice of polypharmacy. Several reports have documented the pivotal role of nurses in controlling polypharmacy especially among the elderly age group (Zurakowski, 2009 ; Bretherton & Day, 2003 ; Woodruff, 2010). Research studies with regard to nurses' knowledge and clinical experience is infrequent. Hence, the objective of this study was to determine the nurse's knowledge of polypharmacy and to explore the clinical experience of polypharmacy in their nursing practice.

MATERIALS AND METHODS

All the nurses working in Gulf Medical College Hospital and Research Centre (GMCHRC), Ajman, United Arab Emirates participated in this cross-sectional, population based study from May- June 2011. Nurses not willing to participate in the study were not included in the study. GMCHRC caters its services to both nationals and expatriates, is a 350 bedded hospital situated in the centre of Ajman Emirate.

Informed consent was obtained from nurses willing to take part in the study. Anonymity was maintained by asking them not to write their names or any other information that can reveal their identity.

A Self-administered structured questionnaire in English language was prepared by the authors with specialty in pharmacology, community medicine, pharmacy and internal medicine. The questionnaire was reviewed by the subject experts for the face validity, content validity, relevance and comprehensiveness of the questionnaire to the study objectives. The questionnaire contained a total of ten questions on socio-demographic characteristics, nurses' knowledge regarding polypharmacy and their clinical experience with polypharmacy. In addition details of socio-demographic characteristics are also included. To assess the knowledge of nurses on polypharmacy two definitions were quoted, one the commonly used and universal

definition: Polypharmacy is defined as "concomitant use of five or more drugs at the same time in the same patient"(Viktill *et al.*, 2007) . The alternative definition used in the questionnaire is the use of two or more medications to treat the same clinical condition (Brager & Sloand, 2005 ; Faries *et al.*, 2005). After the finalization of the questionnaire, the questionnaire was administered to five nurses and the questionnaire was re-administered to the same nurses to check for the reliability of the questionnaire. Data management and analysis was performed using PASW 18 version. Chi-square test was performed to find the association between socio-demographic characteristics and the variables under study (statistical significance at $p < 0.05$). Descriptive statistical analysis was carried out where appropriate, values are expressed as percentage, mean \pm (standard deviation) SD and range.

RESULTS

Socio-demographic characteristics

A total of 92 female and 13 male nurses participated in the survey. The number of nurses less than 25 years of age were 24 (22.8%), 26-30 years 47 (44.8%) and above 30 years were 34 (32.4%) nurses. On the basis of the duration of clinical experience 42 nurses (40%) had nursing experience of less than five years, 47 (44.8%) were between five and 10 years of experience and 16 (15.2%) had more than 10 years of experience. The nurses' mean age was 34 ± 12 years, and an average of 15 years clinical experience.

Knowledge of polypharmacy

The question on the definition of polypharmacy was correctly identified by 48 (45.7%) nurses. The alternative definition was identified by 42 (40%) nurses. Among the male nurses, six (46.2%) of them responded correct definition and among the female nurses, 42 (45.7%) of the total female nurses correctly answered the question. There was no statistical significance between the two groups (table-1).

Table. 1: Comparison of knowledge of Polypharmacy among nurses between male and female nurses.

Item	Yes/ No	Male n=13	Female n=92
Polypharmacy definition			
Use of 5 or more drugs	Yes	6 (46.2%)	42 (45.7%)
	No	7 (53.8%)	50 (54.3%)
Use of 2 or more drugs for single condition	Yes	5 (38.5%)	37 (40.2%)
	No	8 (61.5%)	55 (59.8%)
Rationality of Polypharmacy			
Is polypharmacy rational	Yes	-	8 (8.7%)
	No	3 (23.1%)	16 (17.4%)
	Not aware	10 (76.9%)	68 (73.9%)

It was noticed that nurses with experience less than 5 years 22 (52.4%) responded to the correct meaning of polypharmacy, 5-10 years 22 (46.8%) and only 4 (25%) of the nurses with more than 10 years experience (table-2). It was observed from table 2 that more number of nurses were aware of the alternative definition of polypharmacy with the increase in the duration of clinical experience which was statistically significant ($p < 0.05$).

Table. 2: Comparison of knowledge of Polypharmacy between nurses of varying nursing experience.

Item	Yes/No	Duration of Clinical Experience (in years)			Statistical significance
		< 5 years n=42	5-10 years n=47	>10 years n=16	
Definition of Polypharmacy					
Use of 5 or more drugs	Yes	22(52.4%)	22(46.8%)	4(25%)	NS
	No	20(47.6%)	25(53.2%)	12(75.1%)	
Use of 2 or more drugs for single condition	Yes	10(23.8%)	23(48.9%)	9(56.3%)	p<0.05
	No	32(76.2%)	24(51.1)	7(43.8)	
Rationality of polypharmacy					
Is polypharmacy rational?	Yes	4(9.5%)	2(4.3%)	2(12.5%)	NS
	No	13(31%)	5(10.6%)	1(5.3%)	
	Not aware	25(59.5%)	40(85.1%)	13(81.3%)	

NS: not significant

On inquiring nurses regarding the common age group in which polypharmacy is routinely practiced in the health care setting, 66(62.9%) of the nurses identified the elderly population from the rest of the listed age groups, while 24 (22.9%) nurses opined that it is widespread in all age groups and believe it depends on the clinical diagnosis of the patient and 10 (9.5%) recognized adult population as the patient population regularly exposed to polypharmacy and 5 (4.8%) were uninformed about the common age group representing polypharmacy. The common explanations given by the nurses for the practice of polypharmacy in a health care set up were: to manage individual co-morbidity and concurrent use of multiple medications to improve efficiency of individual drugs.

78 (74.3%) of the nurses acknowledge that they are not aware whether polypharmacy was rational or not, only 19 (18%) answered polypharmacy to be irrational. The non awareness of rationality of polypharmacy was similar between all the groups (gender and experience). The common reasons specified for justifying the rationality of polypharmacy was that the use of multiple drugs are required to manage multiple disease conditions.

Experience

A total of 29 (27.6%) of the nurses have observed prescription with drug number five and greater than five in their routine nursing practice. Irrespective of the clinical experience the elderly patient group was identified as the most common patient population in whom they have come across polypharmacy (less than 5 years ; 29 (69.%), 5-10 years 28 (59.6%) and greater than 10 years 9 (56.3%) . The common responses for the common clinical condition requiring polypharmacy were diabetes, hypertension, myocardial infarction, critically ill patients and psychiatric patients.

DISCUSSION

Nurses play a key role in patient care of with regard to medication administration. They can contribute significantly in controlling polypharmacy. This survey finding highlights the knowledge and experience of nurses concerning practice of polypharmacy.

Polypharmacy is defined as “concomitant use of five or more drugs at the same time in the same patient” (Viktil *et al.*, 2007). Polypharmacy has also been defined as the use of two or

more medications to treat the same condition which could be two or more drugs of the same chemical class, or use of two or more drugs with similar pharmacologic actions to treat different conditions in same patient (Kingsbury, 2001). More than 50% of the nurses were not aware of the meaning of polypharmacy though the nurses with more clinical experience identified with the alternative definition. This finding was similar with (Lim *et al.*, 2010) study among nurses which showed knowledge deficits in multiple medication management among elderly patients. It is a well documented fact that elderly represent the patient population most vulnerable to polypharmacy due to their concurrent co-morbid conditions (Queneau, 2006). Majority of the nurses correctly identified elderly as the most vulnerable to polypharmacy irrespective of the gender and nursing experience. This finding could be probably due to their experience with the elderly patients. A quarter of the nurses opined that polypharmacy is practiced in all age groups depending on the clinical diagnoses. A previous study carried out in Sweden from 2005 to 2008 documented that the prevalence of polypharmacy is on a rise and observed a trend of increasing polypharmacy among all the ages (Hovstadius *et al.*, 2010). The possible explanations specified for this trend include: changes in the patterns of prescriptions for various drug treatments as well as the introduction of newer drugs for treatment of conditions. Also, with patients being increasing more informed, they very often request an augmented number of prescription drugs (Austin, 2006). Polypharmacy occasions greater concern because each drug that is added to the patient's regimen increases the likelihood of an adverse outcome and the expense of the treatment (Preskorn, 1995). There are guidelines and criteria put forward to reduce adverse outcomes with the use of multiple drugs for a given clinical condition, e.g. Criteria for polypharmacy in psychiatric practice (Berenbeim, 2002). Most of the nurses acknowledge the non-awareness of the concept of rational polypharmacy. The knowledge of polypharmacy and the detrimental effects will not be sufficient to circumvent the issue of indiscriminate polypharmacy, but the knowledge of principles of rational use of drugs to enhance the practice of rational drug therapy or rational polypharmacy is also crucial. (Baandrup *et al.*, 2010) study carried out on the rationality of antipsychotic drug polypharmacy among nurses working in psychiatric department reported that in the nurse's opinion antipsychotic polypharmacy is rational as it benefitted the patients. Therefore, the knowledge of rationality of polypharmacy is essential among the nursing community. Regular review of the

prescribed medications, identification of irrational prescriptions can be executed by nurses (Chakraborty *et al.*, 2010). In a study carried out among district nurses in Sweden by (Gusdal *et al.*, 2011) to help nurses identify irrational polypharmacy, nurses suggested that the use of safe medication assessment tool as a very effective method to identify unsafe medications among patients on multiple medications. The findings of the present study also highlight the need for continuing professional education and workshops on polypharmacy among nurses. In Lim *et al* study after a training session on management of polypharmacy the post test survey document significant improvement in nurses knowledge of medication management after training sessions (Lim *et al.*, 2010). Limitations of our study included the general limitations of studies based on questionnaires. The true knowledge and experiences could not be drawn as accuracy of the answers are possible only if the respondents answered honestly which is subjective and cannot be tested objectively by questionnaires. An observatory study on the practice pattern could be taken up to overcome this limitation. Also since this study was carried out at one centre it cannot be generalized to all the nurses across the country or world. In conclusion, there are knowledge deficiencies among the nurses regarding polypharmacy especially with regard to rational and irrational polypharmacy. Suitable initiatives such as continuing professional education can be taken up to tackle these lacunae. Thus, with the knowledge of polypharmacy nurses can work as a group with the clinicians and pharmacists to educate the patients on multiple medications about consequences of polypharmacy can provide and achieve better and improved patient care .

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