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**NURSES' KNOWLEDGE OF CLINICAL PHARMACY SERVICES  
PROVIDED BY PHARMACIST IN PUBLIC HOSPITALS OF  
QUETTA CITY, PAKISTAN**

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**Abstract:****Objective:**

The objective of this research is to document and evaluate nurses' knowledge towards clinical pharmacy services offered by pharmacists in public hospital of Quetta city, Pakistan.

**Methods:**

The study was designed as a questionnaire based, cross sectional survey. 322 nurses were approached through a self administered questionnaire. Descriptive statistics were applied to explain respondent's demographic characteristics. Categorical variables were measured as percentages whereas continuous variables were expressed as mean (SD). SPSS v20.0 was used for statistical analysis.

**Results:**

A total of 322 questionnaires were distributed and 315 were returned within a response rate of 97%. Majority of the respondents (146 46.3%) were in age range of 28-37 and 269 (85.4%) were working as staff nurse. 255 (81%) had diploma in nursing. A mix response was reported when nurses' perception towards clinical role of pharmacists was assessed. For the statements identifying medication errors and preventing medication errors, majority of respondents disagree with statements. Majority of respondents (192, 91.7%) disagreed with the statement that pharmacist is drug therapy expert. For the statement that pharmacist can improve the quality of medical care and patient care in hospital setting, 178 (56.5%) and 175 (55.6%) respondents disagreed with statements respectively.

**Conclusion:**

Overall, nurses reported poor knowledge of clinical pharmacy services provided by pharmacist in public hospitals. There seems to be multiple factors involved and hence a more comprehensive study is needed to identify specific factors affecting the poor knowledge of nurses.

**Keywords:** Nurses' knowledge, clinical pharmacy services, pharmacist, public hospitals, Quetta city, Pakistan

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**INTRODUCTION:**

A professional pharmacy service is defined as “an action or set of actions undertaken in or organized by a pharmacy, delivered by a pharmacist or other health practitioner, who applies their specialized health knowledge personally or via an intermediary, with a patient/client, population or other health professional, to optimize the process of care, with the aim to improve health outcomes and the value of healthcare” [1]. Clinical pharmacy services provided by pharmacist optimizes drug therapy and promotes good health, wellness, and disease prevention[2]. The impact of clinical pharmacy services on mortality rates revealed that consideration of a core set of clinical pharmacy services to be offered in hospitals worldwide (Bond & Raehl, 2007). Economic aspects of pharmacy services are positive, decrease in cost of the treatment is significant which has a key impact on positive outcome and reduced heavy burden on government expenditure in health budgets[3]. A study in USA suggested that clinical pharmacy services were associated with less medication error rates and there was huge reduction in medication errors [4]. The study further incorporated guidelines for hospital pharmacy directors and clinical coordinators in assigning resources to optimize patient’s need in this regard[5]. Three regional studies conducted in Canada found that pharmacists provided health-education and disease-prevention services and advice less frequently than medication-related practices which are of key concern for providing pharmacy services in the country [6-8]. A study conducted in Australia suggested that clinical pharmacy services provide reduction in occurrence of Drug Related Problems in the elderly patients [9]. The positive impact of clinical pharmacy services on clinical, economic, and humanistic outcomes has been demonstrated in numerous publications in North America and the UK [10,11]. In Belgium, barriers to the implementation of clinical pharmacy services have been the lack of specific training for pharmacists, the limited number of pharmacist, the absence of financial support, and the fear of poor acceptance from healthcare professionals [12].

An important aspect of strategic planning for implementing clinical pharmacy services is to target patients at high risk, because of multiple comorbidities, multiple medication use, altered pharmacokinetics and pharmacodynamics, and frequent inappropriate prescribing [13]. Clinical pharmacy is in its primitive stage in developing countries, especially in countries like India and Pakistan with the number of patients and hospitals, drugs and chronic diseases increasing gradually. Given the current situation, clinical pharmacy services can provide a significant benefit to millions of patients [14]. The development of clinical pharmacy services in Pakistan is in progress and

pharmacists will have to face resistance to enhancing their functional role in patient care not only from medical doctors but also from the paramedical staff, especially nurses. On the other hand physicians are also uncomfortable with the role of the pharmacist in direct patient care in Pakistan. Findings have shown that doctors consider pharmacists as drug information experts. However, their anticipation of pharmacists as providers of quality clinically-focused pharmacy services was low[15,16]. As there is scarcity of information on nurses’ knowledge of clinical pharmacy service provided by pharmacists, the objective of this research is to document and evaluate nurses’ knowledge towards clinical pharmacy services offered by pharmacists in public hospital of Quetta city, Pakistan.

**METHODS:**

The study was designed as a questionnaire based, cross sectional survey. Seven tertiary care public hospital namely Sandeman Provincial Hospital, Bolan Medical Complex Hospital, Fatima Jinnah Hospital, Helper Eye Hospital, Balochistan Institute of Nephrology, Mohtarman Benazir Bhutto Hospital and Sheikh Khalifa Bin Zayed Hospital of Quetta city, Pakistan were targeted for data collection.

**Sample size, time frame and criteria**

Eight hundred and twenty three nurses were practicing in the seven hospitals. By using Yamene’s sample size formula, a total of 322 participants were approached through systematic random sampling method[17]. The study was conducted from December 2016 to March 2017. All trainees and students were excluded from the study.

**Study questionnaire, translation, validation and reliability**

The study tool was developed through a comprehensive literature review and by consulting senior researchers of the relevant field. The questionnaire consisted of three parts, a consent letter, demographic details and KAP questions. The questionnaire was translated into Urdu language (official language of Pakistan) through standard translating procedure and tested for its reliability and validity. Face and content validity was conducted through research supervisor and two experts in practice based research. The tool was piloted among 30 nurses to further establish the reliability and validity. Little modification was needed and the final version was declared reliable with an internal consistency of 0.80. Data from the pilot analysis was not included in the original research.

**Ethical approval**

Institutional Ethical Committee, Faculty of Pharmacy and Health Sciences, University of Balochistan approved the study. Permission from the respective medical superintendents was also taken into

consideration. Additionally, written consent from the participants were obtained whereby participants were informed about their rights of participation in the study.

#### Statistical Analysis

Descriptive statistics were applied to explain respondent's demographic characteristics. Categorical variables were measured as percentages whereas

continuous variables were expressed as mean (SD). SPSS v20.0 was used for statistical analysis.

#### RESULTS:

##### Demographic characteristics of study respondents

A total of 322 questionnaires were distributed and 315 were returned within a response rate of 97%. Majority of the respondents (146 46.3%) were in age range of 28-37 and 269 (85.4%) were working as staff nurse. 255 (81%) had diploma in nursing as shown in table 1.

**Table 1: Demographic characteristics of study respondents**

	Frequency	Percentage
<b>Age Group</b>		
18-27	86	27.3
28-37	146	46.3
38-47	70	22.2
More than 47	13	4.1
<b>Current Position</b>		
Matron	2	0.6
Head Nurse	23	7.3
Staff Nurse	269	85.4
Diploma Holder	7	2.2
Trainee	14	4.4
<b>Highest Qualification</b>		
B.S.N	56	17.8
BSC Nursing	4	1.3
Diploma in Nursing	255	81
<b>Year of Qualification</b>		
1980-90	11	3.5
1991-2000	71	22.5
2001-2010	174	55.2
Above 2010	59	18.7
<b>Current Working Institute</b>		
Balochistan institute of Nephrology Quetta	08	2.5
Bolan Medical Complex Hospital	136	43.2
Fatima Jinnah chest & General Hospital	29	9.2
Helper Eye Hospital	09	2.9
Mohtarma Benazir Bhutto Shaheed Hospital	09	2.9
Sandeman Provincial Hospital	111	35.2
Sheikh Khalifa bin Zayed Hospital	13	4.1
<b>Job Experience</b>		
1-5 year	111	35.2
6-10 years	85	27
11-15 years	66	21
16-20 years	28	8.9
More than 20 years	25	7.9

**Knowledge towards pharmacy services**

Table 2 describes knowledge of the respondents towards pharmacy services. Majority of respondents (192, 91.7%) disagreed with the statement that pharmacist is drug therapy expert. For the statement that pharmacist can improve the quality of medical care and patient care in hospital setting, 178 (56.5%) and 175 (55.6%) respondents disagreed with statements respectively. 185 (58.7%) disagreed that pharmacist can perform as an important integral part of clinical ward team while 181 (80%) disagreed that pharmacist

should acquire training in certain medical areas to perform patient counseling as shown in Table 2.

**Nurses' perception towards clinical role of pharmacists**

A mix response was reported when nurses' perception towards clinical role of pharmacists was assessed. For the statements identifying medication errors and preventing medication errors, majority of respondents disagree with statements. For the statements that pharmacist can design and monitor pharmacotherapeutic regimens, respondents disagreed as shown in Table 3.

**Table 2: Nurses' knowledge towards pharmacy services**

Questions	Yes		No		Don't know	
	N	%	N	%	N	%
Do you think pharmacist is drug therapy expert?	123	39	147	46.7	45	14.3
Do you think that clinical services are role of pharmacist beyond drug dispensing and distribution?	211	67	99	31.4	5	1.6
Providing clinical pharmacy services is an important role of pharmacist	299	94.9	15	4.8	1	0.3
Do you believe that pharmacist with their clinical role can improve the quality of medical care in hospital setting?	137	43.5	142	45.1	36	11.4
Do you think that pharmacist with their clinical role can improve the quality of patient care in hospital setting?	140	44.4	137	43.5	38	12.1
Do you believe that pharmacist with their clinical role can perform an important integral part of clinical ward team?	130	41.3	146	46.3	39	12.4
Do you think that pharmacist should acquire training in certain medical areas to perform patient counselling?	134	42.5	148	47	33	10.5
Are you willing to cooperate with the pharmacist with their clinical role?	199	63.2	106	33.7	10	3.2

*Note: The do not know option was also taken as 'no' and the values were summed up for both options*

**Table 3: Nurses' perception towards clinical role of pharmacists**

Questions	SA*		A*		N*		D*		SD*	
	N	%	N	%	N	%	N	%	N	%
The role of pharmacist is to identify medication error.	31	9.8	121	38.4	54	17.1	108	34.3	1	0.3
The role of pharmacist is to prevent medication error.	40	12.7	102	32.4	61	19.4	108	34.3	4	1.3
The role of pharmacist is to design pharmacotherapeutic regimens.	31	9.8	110	34.9	70	22.2	94	29.8	10	3.2
The role of pharmacist is to monitor pharmacotherapeutic regimens?	29	9.2	102	32.4	87	27.6	85	27	12	3.8
The role of pharmacist is to educate patient with regard to use of drug.	21	6.7	157	49.8	42	13.3	94	29.8	1	0.3
The role of pharmacist is to educate patient with regard to safety of drug.	25	7.9	149	47.3	49	15.6	91	28.9	1	0.3
The role of pharmacist is to educate patient with regard to dose of drug.	35	11.1	131	41.6	48	15.2	97	30.8	4	1.3
The role of pharmacist is to educate patient with regard to frequencies of drug.	38	12.1	121	38.4	46	14.6	108	34.3	2	0.6
The role of pharmacist is to educate patient with regard to ADRs/side effects of drug.	27	8.6	116	36.8	75	23.8	85	27	12	3.8
The role of pharmacist is to educate patient with regard to Allergies of drug.	28	8.9	128	40.6	59	18.7	96	30.5	4	1.3
The role of pharmacist is to educate patient with regard to cost of drug.	14	4.4	110	34.9	52	16.5	129	41	10	3.2
The role of pharmacist is to educate patient with regard to non-prescription medication.	30	9.5	109	34.6	46	14.6	123	39	7	2.2
The role of pharmacist is to educate patient with regard to brand alternatives.	24	7.6	107	34.0	59	18.7	113	35.9	12	3.8

*SA = strongly agree, A = agree, N = neutral, D = disagree, SD = strongly disagree*

**DISCUSSION:**

To the best of our knowledge, this is the first study of its type on nurses from Quetta city, Pakistan. In line with what is reported by our study, a study conducted on nurses in public hospital of Australia pointed out poor knowledge of nurses about identification and prevention of medication error [18]. This shows lack of knowledge among nurses which is also predominant in other question asked in this study. In another study conducted on nurses revealed that they were reluctant to collaborate with pharmacist in patient counselling which reemphasises the finding of this study as nurses were unaware of the role of pharmacist in patient counselling. That might be because of nurses are restricted to administer the medicine to the patient and don't collaborate with pharmacist [19].

In terms of improving quality of medical and patient care in hospital, negative results of our study revealed that nurses are unaware of the new and critical role of pharmacist that was evolved in recent years. This is also evident from literature where the authors had the same findings as mentioned by our study [20]. Similarly, the Scottish study reported poor nurses' perception towards designing and monitoring of pharmacotherapeutic regimen which is what is reported by the current settings [21]. It is now known that pharmacist can play integral role as member of ward based teams. However, lack of communication with nurses reveals opposite results. A possible reason might be because pharmacist interact clinically with the physician rather than nurses in the process of designing in patient treatment or improving quality of care [22]. Within this context, we have to remember that in Quetta city, pharmacist were inducted in government jobs very recently and their interaction has not been established with other healthcare professionals. Additionally, due to heavy burden and workload in tertiary hospitals for two to three wards only one pharmacist is available and that is also a dominant factor that nurses are unaware of the clinical role/services provided by pharmacist.

**CONCLUSION:**

Overall, nurses reported poor knowledge of clinical pharmacy services provided by pharmacist in public hospitals. Poor interaction with pharmacists and lack of communication were identified by our study. Furthermore, lack of involvement of pharmacists themselves is something that should be considered. There seems to be multiple factors involved and hence a more comprehensive study is needed to identify specific factors affecting the poor knowledge of nurses.

**Declaration**

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