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NURSES' PERCEPTION TOWARDS ANTIBIOTIC USE AND RESISTANCE: RESULTS FROM A KAP STUDY

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Abstract:

Objective:

The present study aims to evaluate knowledge attitude and practice (KAP) of nurses towards antibiotic use and resistance in tertiary care hospitals of Quetta city, Pakistan.

Methods:

The KAP study was designed as a cross-sectional descriptive survey. A total of 322 nurses practicing at seven different public tertiary care hospitals of Quetta city were targeted for the study. KAP towards antibiotic use and resistance was evaluated by using a pre validated questionnaire consisting 24 questions. Descriptive statistics were used for explaining demographic characteristics. All statistical calculation was completed by SPSS 20.0.

Results:

Out of 322 distributed questionnaires, 297 were completed and returned with a response rate of 92%. Two hundred and ninety three (98.7 %) were female and 150 (50.5%) had age range of 28-37 years. 275 (92.6%) were staff nurses and (73.7%) had diploma in nursing. Mean scores of knowledge, attitude and practice were 5.39 ± 1.43, 6.59 ± 1.56 and 4.89 ± 1.65 indicating good knowledge, positive attitude but poor practices towards antibiotic use and resistance respectively.

Conclusion:

The result of current study indicated adequate knowledge, positive attitude but poor practice of nurses towards antibiotic use and resistance. The poor practice of nurses may lead to negative outcome to the health of patients, hence clinical education should be provided to nurses to improve their practice towards the rising problem. Special courses should be incorporated in curriculum in nursing schools and colleges to improve nurses' practices towards antibiotic resistance.

Keywords: *Knowledge, attitude, practice, nurses, antibiotic use and resistance, Quetta city*

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INTRODUCTION:

Antibiotic resistance is global threat. World Health Organization stated that more than 23000 people die or become critically ill due to the antibiotic resistance therefore the unavoidable threat to human life is rising day by day [1]. As antibiotics are frequently abused and overused in many countries, thus resistance to antimicrobials has led to an increase in morbidity, mortality and increased cost of health care [2-6]. To maintain the useful life of antimicrobial drugs, there is a need to improve access to diagnostic laboratories, improved surveillance of the emergence of resistance, better regulation of the use of antibiotics, and better education of the public, doctors, and healthcare professionals towards quality use of drugs [7]. Antibiotics are frequently prescribed in the treatment of viral infections or at wrong doses for incorrect periods of time, thus leading to negative outcomes and develop antibiotic resistance[8] . Such poor practices are related to the emergence of resistance [9]. As development of resistance continue to develop, therapeutic options are also becoming limited [10]..

Among the strategies to control antibiotic resistance, one key issue is to ensure appropriate prescribing through education. There is evidence in the UK that prescribing antibiotics for upper-respiratory-tract infections has been substantially reduced over the past 5 years. That has been brought about by educational campaigns, raising professional awareness to all healthcare providers, and changing public perception of the need for antibiotics[11]. However, in developing countries like Pakistan, there are deficiencies in practices among all health care providers, lack of in-service trainings of health personnel those results in poor provision of knowledge about drugs. Although this situation is serious for all healthcare professionals but has a more serious concern for nurses as they carry the final responsibility of administering medications to the patients [12]. Nurses work at multiple levels within the clinical setting, play a key role in patient safety and have the most consistent presence as patient care. With review of medication charts being part of routine professional practice and as appointed as a primary healthcare worker within the hospital setting to administer medications, nurses are in a key position to contribute to the multidisciplinary management of antimicrobials throughout both acute and chronic care settings [13].

In Pakistan, nurses have to fill a huge gape as they are not involved in decision making regarding medication selection or change of drug therapy. Nurses are performing traditional practice of administering medications and are not involved in multidisciplinary teams. In terms of medicine management, nurses have to be aware of the emerging antibiotic resistance problem so that they can provide optimal care to the patient. However, there is paucity of data from Pakistan that elaborate nurses' information towards antibiotic resistance in Pakistan. Therefore, the current study was aimed to evaluate knowledge attitude and practice of nurses towards antibiotic resistance practicing at tertiary care hospitals of Quetta city, Pakistan.

METHODS:

Study design and settings

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, Mohtarma Benazir Bhutto Hospital and Sheikh Khalifa Bin Zayed Hospital of Quetta city, Pakistan were targeted for data collection.

Sample size and sampling 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 [14]. All trainees and nursing students were excluded from the study.

Study questionnaire, translation, validation and reliability

The study tool was developed through a comprehensive literature review [15-17] 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 procedures [18] 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 0.78. 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 was 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

A total of 322 questionnaires were distributed and 297 were returned with a response rate of 92.2%. The cohort was dominated by females (n=293, 98.7%) with 150 (50.5%) had age range of 28-37 years. Majority of the respondents (n=275, 92.6%) were staff nurses and 219 (73.7%) had diploma in nursing. Thirty five percent had working experience of 1-5 years followed by 72 (24.2%) with experience of 6-10 years as shown in Table 1.

Table 1: Demographic characteristics of the study respondents

Characteristics	Frequency	Percentage
Age group (years)		
18-27	76	25.6
28-37	150	50.5
38-47	59	19.9
> 47	12	4.0
Gender		
Male	4	1.3
Female	293	98.7
Current position		
Matron	2	0.7
Head Nurse	20	6.7
Staff Nurse	275	92.6
Highest qualification		
B.S.C Nursing	05	1.7
B.S.C Nursing (Midwife Diploma)	1	0.3
B.S.N	64	21.5
Diploma in Nursing	219	73.7
Graduate nursing	3	1.0
Nursing Specialization	1	0.3
Post Graduate	1	0.3
Post R/N B.S.C-N	1	0.3
S.N	2	0.7
Current working institute		
Balochistan Institute of Nephrology	06	2.0
Bolan Medical Complex Hospital	136	45.8
Fatima Jinnah Chest & General Hospital	24	8.1
Helper Eye Hospital	06	2.0
MSBBH	06	2.0
Sandeman Provincial Hospital	113	38
Sheikh Khalifa Bin Zayed Hospital	06	2.0
Job experience (years)		
1-5	104	35
6-10	72	24.2
11-15	65	21.9
Above 15	56	18.9

Assessments of knowledge towards antibiotic resistance

Table 2 describes response of participants towards antibiotic resistance. Knowledge was assessed by asking questions on antibiotic resistance focusing on

use of antibiotic in different condition, effectiveness of antibiotics, individual preferences, knowledge towards sensitivity test and antibiotic resistance in connection with quality use.

Out of 297 respondents, 193 (64.9%) had adequate knowledge towards antibiotic resistance. Poor knowledge was apparent in question 2 and 3, relating to antibiotic use in viral infections and in cold and cough while correct answers were evident in question 1, 4,5,6,7 and 8. Mean knowledge was 5.39±1.43.

Assessment of attitude towards antibiotic resistance

Table 3 describe attitude of respondents towards antibiotic resistance. Attitude was assessed by questions on misuse of antibiotic, problem analysis, measures to minimize antibiotic resistance, sensitivity test, leading cause of antibiotic resistance, effect on health of patient and studies exploring the problem of resistance. Two hundred and fifty two (85%) had positive attitude whereby correct answers were apparent in question 1-8. Mean attitude was 6.59±1.56.

Table 2: Knowledge towards antibiotic resistance among study respondents

Question	Yes N (%)	No N (%)	Don't know N (%)
Have you ever heard of antibiotics resistance?	269 (90.6)	28 (9.4)	0 (0)
Do you agree that antibiotic can cure viral infections?	158 (53.2)	128 (43.1)	11 (3.7)
Do you believe that using antibiotics in cold and cough will speed up the recovery?	198 (66.7)	84 (28.3)	15 (5.1)
Do you consider antibiotics can cure bacterial infections?	281 (94.6)	12 (4.0)	4 (1.3)
Do you know that using antibiotics frequently will decrease the efficacy of treatment?	222 (74.7)	54 (18.2)	21 (7.1)
Do you consider that newer and more costly antibiotics effect better?	121 (40.7)	136 (45.8)	40 (13.5)
Have you ever heard of a test to check antibiotic resistance?	193 (65.0)	78 (26.3)	26 (8.8)
Do you agree when antibiotics are administered for no specific reason, their efficacy can be decreased and they become more resistant?	201 (67.7)	63 (21.2)	33 (11.1)

Knowledge scores ranged from 8 (maximum) to 0 (minimum). Scores >4 were considered as adequate while <4 as poor knowledge towards antibiotic resistance. Mean knowledge was 5.39±1.43 indicating adequate knowledge towards antibiotic resistance

Table 3: Attitude towards antibiotic resistance among study respondents

Question	Yes N (%)	No N (%)	Don't know N (%)
Do you think there is misuse of antibiotics at present?	251 (84.5)	32 (10.8)	14 (4.7)
Do you think antibiotics resistance has become a major challenge?	267 (89.9)	26 (8.8)	4 (1.3)
Do you think that measures should be taking to minimize antibiotic resistance?	276 (92.9)	9 (3.0)	12 (4.0)
Do you think involving all healthcare providers is better option to minimize antibiotic resistance?	252 (84.8)	14 (4.7)	31 (10.4)
Do you consider sensitivity test is good option for assessing antibiotic resistance?	216 (72.7)	33 (11.1)	48 (16.2)
Do you think misuse of antibiotics has become the main cause leading to bacterial resistance?	243 (81.8)	42 (14.1)	12 (4.0)
Can antibiotic resistance affect overall health of your patient?	200 (67.3)	93 (31.3)	4 (1.3)
Do you consider studies about antibiotic resistance are true?	250 (84.2)	28 (9.4)	19 (6.4)

Attitude scores ranged from 8 (maximum) to 0 (minimum). Scores >4 were considered as positive while <4 as negative attitude towards antibiotic resistance. Mean attitude score was 6.59±1.56 indicating an overall positive attitude towards antibiotic resistance

Table 4: Practices towards antibiotic resistance among study respondents

Question	Yes N (%)	No N (%)	Don't know N (%)
Do you consider dose of antibiotic should be adjusted according to the condition?	271 (91.2)	10 (3.4)	16 (5.4)
Do you recommend patient to ask physician about sensitivity test for assessing antibiotic resistance?	237 (79.8)	28 (9.4)	32 (10.8)
Using antibiotic in low dose can cause resistance?	132 (44.4)	138 (46.5)	27 (9.1)
Do you consider despite of condition in any infection antibiotic must be given?	54 (18.2)	223 (75.1)	20 (6.7)
Do you recommend stop taking antibiotics after recovery from symptoms?	159 (53.5)	127 (42.8)	11 (3.7)
Have you ever suggested that patient should consult pharmacist about taking antibiotic?	166 (55.9)	115 (38.7)	16 (5.4)
Have you ever consulted the pharmacist about using antibiotic?	146 (49.2)	143 (48.1)	8 (2.7)
Would you advice the patient to consult physician to take same antibiotic which other patient is using during same condition?	158 (53.2)	113 (38.0)	26 (8.8)

Practice scores ranged from 8 (maximum) to 0 (minimum). Scores >4 were considered as quality while <4 as poor practices towards antibiotic resistance. Mean practice score was 4.89±1.65 indicating an overall poor practice towards antibiotic resistance

Assessment of practices towards antibiotic resistance

Table 4 describes practice of participants towards antibiotic resistance. Practice was assessed by asking questions on antibiotic resistance focusing on dose of antibiotic, sensitivity test for assessing resistance, recovery from symptoms recommend stopping taking antibiotics and consultation with pharmacists. Out of 297 respondents, 143 (48%) showed quality practices of antibiotics. Poor practices were related to questions 3, 5, 7 and 8. Mean practice score was 4.89±1.65 which revealed poor practices towards antibiotics among the current study respondents.

DISCUSSION:

The present study reveals that adequate knowledge, positive attitude but poor practices regarding antibiotic use and resistance exist between staff nurses working in Quetta city. The current study result showed good knowledge, positive attitude but poor practice towards antibiotic resistance. To the best of our knowledge, it is first KAP study conducted on nurses regarding antibiotic resistance in tertiary care hospital. The strong point of this study is to address the major challenge of antibiotic use and resistance in Quetta, Pakistan. The other strength of this study is to involve a key healthcare provider (staff nurse) which play a key role in combating this global challenge and put their efforts to minimize or elaborate the problem to others.

The finding of the research elaborate that poor practice is dominant in respondents which can be due to lack of research, limited resources in tertiary care hospital, work burden and while keeping to traditional practices which are to administer the drugs without clinical involvement in wards. Other major outcome is about the duration of antibiotic use to stop taking after improvement in symptoms which could be due to their lack of communication with the pharmacist. More than 50% of the nurses never interacted with the pharmacist during their work in hospital. Another issue is use of same antibiotic again and again which could be due to limitation of interaction. Not to forget lack of financial resources for a developing country hence healthcare providers have to use same antibiotic again and again.

In a study conducted in Jordan, poor knowledge regarding use of antibiotic which is dissimilar to result of this study [19]. One of the study conducted in Agha Khan Hospital Pakistan revealed that nurses are usually out of clinical participation that could have negative impact on practice of nurses as supported by the current study [20]. In another KAP study conducted in Trinidad and Tobago, good knowledge was reported but was not converted into the good practice as nurses involvement is limited in current settings where nurses only contribute to inject or administer the drugs [21]. One of the study conducted in general hospitals of Brazil, staff knowledge about antibiotic resistance indicated that nurses has limited knowledge about use of same antibiotic. The findings indicates lack of proper

selection of antibiotic which could be due to lack of communication with pharmacist or other clinical experts and is also eminent from our study . In another study conducted on paramedical staff's KAP about antibiotic use and resistance indicated same result that antibiotic can cure viral infection which revealed poor knowledge hence leading to poor practice [22]. Furthermore, in a study conducted in tertiary care hospital in India about antibiotic usage, staff nurses exhibited same observation on similar question when asked about to stop taking antibiotic when symptoms get better which is similar to our study[23].

CONCLUSION:

The result of current study indicated adequate knowledge and positive attitude but poor practice towards antibiotic use and resistance. The poor practice of nurses may lead to negative outcome to the health of patients. Therefore, clinical education should be provided to nurses to improve their practice towards this rising problem. Special courses should be incorporated in nursing curriculum in school and colleges to improve nurses' clinical role regarding antibiotic use and resistance.

Declaration

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REFERENCES:

1. Laxminarayan, R., Duse, A., Wattal, C., Zaidi, A. K., Wertheim, H. F., Sumpradit, N., . . . Goossens, H. Antibiotic resistance—the need for global solutions. The Lancet infectious diseases, 13(12), 1057-1098.

Moura, J. P. d., & Gir, E. (2007). Nursing staff knowledge of multi-resistant bacterial infections. Acta Paulista de Enfermagem, 2013;20(3), 351-356.

2. Amabile-Cuevas, C. Antibiotic resistance in Mexico: a brief overview of the current status and its causes. The Journal of Infection in Developing Countries,2010; 4(03), 126-131.

3.Andersson, D. I., & Hughes, D. Antibiotic resistance and its cost: is it possible to reverse resistance? Nature Reviews Microbiology, 2010;8(4), 260-271.

4. Currie, J., Lin, W., & Zhang, W. Patient knowledge and antibiotic abuse: Evidence from an audit study in China. Journal of health economics,2011; 30(5), 933-949.

5.Dagan, R., & Fraser, D. Conjugate pneumococcal vaccine and antibiotic-resistant Streptococcus pneumoniae: herd immunity and reduction of otitis morbidity. The Pediatric infectious disease journal, 2000;19(5), S79-S88.

6.de Jonge, E., Schultz, M. J., Spanjaard, L., Bossuyt, P. M., Vroom, M. B., Dankert, J., & Kesecioglu, J. Effects of selective decontamination of digestive tract on mortality and acquisition of resistant bacteria in intensive care: a randomised controlled trial. The Lancet, 2003;362(9389), 1011-1016.

7.Sharma, R., Sharma, C., & Kapoor, B. Antibacterial resistance: current problems and possible solutions. Indian Journal of Medical Sciences, 2005;59(3), 120-129.

8. Guillemot, D., Carbon, C., Balkau, B., Geslin, P., Lecoeur, H., Vauzelle-Kervroëdan, F., . . . Eschwége, E. Low dosage and long treatment duration of β-lactam: risk factors for carriage of penicillin-resistant Streptococcus pneumoniae. Jama,1998; 279(5), 365-370.

9. Barbosa, T. M., & Levy, S. B. The impact of antibiotic use on resistance development and persistence. Drug resistance updates,2000; 3(5), 303-311.

10. Theuretzbacher, U. Future antibiotics scenarios: is the tide starting to turn? International journal of antimicrobial agents, 2009;34(1), 15-20.

11. Singer, R. S., Finch, R., Wegener, H. C., Bywater, R., Walters, J., & Lipsitch, M. Antibiotic resistance—the interplay between antibiotic use in animals and human beings. The Lancet infectious diseases,2003; 3(1), 47-51.

12. Siddiqi, S., Hamid, S., Rafique, G., Chaudhry, S., Ali, N., Shahab, S., & Sauerborn, R. Prescription practices of public and private health care providers in Attock District of Pakistan. The International journal of health planning and management,2002; 17(1), 23-40.

13. Edwards, R., Drumright, L., Kiernan, M., & Holmes, A. Covering more territory to fight resistance: considering nurses' role in antimicrobial stewardship. Journal of infection prevention2011;, 12(1), 6-10.

14. Yamane, T. (1967). Statistics, an introductory analysis (2 ed.). New York: Harper and Row.

15. Del Fiol, F. d. S., Barberato-Filho, S., Lopes, L. C., da Cassia Bergamaschi, C., & Boscariol, R. Assessment of Brazilian pharmacists' knowledge about antimicrobial resistance. The Journal of Infection in Developing Countries,2015; 9(03), 239-243.

16. Huang, Y., Gu, J., Zhang, M., Ren, Z., Yang, W., Chen, Y., . . . Zhang, F. (2013). Knowledge, attitude and practice of antibiotics: a questionnaire study among 2500 Chinese students. BMC medical education, 13(1), 1.

17.Rouusounides, A., Papaevangelou, V., Hadjipanayis, A., Panagakou, S., Theodoridou, M., Syrogiannopoulos, G., & Hadjichristodoulou, C. Descriptive study on parents' knowledge, attitudes

and practices on antibiotic use and misuse in children with upper respiratory tract infections in Cyprus. International journal of environmental research and public health,2011; 8(8), 3246-3262.
18. Wild, D., Grove, A., Martin, M., Eremenco, S., McElroy, S., Verjee-Lorenz, A., & Erikson, P. Principles of good practice for the translation and cultural adaptation process for patient-reported outcomes (PRO) measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. Value in health,2005; 8(2), 94-104.
19. Shehadeh, M., Suaifan, G., Darwish, R. M., Wazaify, M., Zaru, L., & Alja'fari, S. Knowledge, attitudes and behavior regarding antibiotics use and misuse among adults in the community of Jordan. A pilot study. Saudi Pharmaceutical Journal, 2012;20(2), 125-133.
20. Lalani, N. S., & Gulzar, A. Z. Nurses'role in patients'discharge planning at the Aga Khan University Hospital, Pakistan. Journal for Nurses in Professional Development, 2001;17(6), 314-319.
21. Ahmad, A., Khan, M. U., Patel, I., Maharaj, S., Pandey, S., & Dhingra, S. Knowledge, attitude and practice of B. Sc. Pharmacy students about antibiotics in Trinidad and Tobago. Journal of research in pharmacy practice, 2015;4(1), 37-41.
22. Sadasivam, K., Chinnasami, B., Ramraj, B., Karthick, N., & Saravanan, A. Knowledge, Attitude and Practice of Paramedical staff towards antibiotic usage and its resistance. Biomedical and Pharmacology Journal, 2016;9(1), 337-343.
23.Sampath, S., & Venoukichenane, V. Knowledge, attitude and practice of antibiotics usage among health care personnel in a tertiary care hospital. Scholars Journal of Applied Medical Sciences, 2016;4(9B), 3294-3298.