

## A study on the Knowledge of Accreditation Standards of Medication Management among Health Care Workers in a Tertiary Care Hospital.

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### ABSTRACT

**Background:** Medication management is that optimizes safe, effective, appropriate drug therapy for patient's care. This study was conducted to assess the knowledge of accreditation standards of Medication Management among health care workers. **Materials & Methods:** A cross-sectional study was conducted among healthcare workers working in tertiary care hospitals across Chennai Tamil Nadu. A total of 370 were responded. A semi structured questionnaire was developed to explore the knowledge of accreditation standards of medication management among healthcare workers. Data was collected and analysed. **Results:** Out of 370 responders, majority (82.7%) of them were females. Majority (56.2%) were between the age group of 21-25 years. 87.6% were Nursing, 6.2% belongs to Allied Health Sciences, 4.3% were Pharmacists, 1.1% belong to medicine and 0.8% were Dentists. Majority (80.3%) of the respondents had previous knowledge on medication management. 77.8 % had adequate knowledge, 21.6% had moderate knowledge and 0.5% had inadequate knowledge on medication management. The average mean knowledge of the study participants was  $30.00 \pm 4.031$ . Association between knowledge of medication management with demographic variables were statistically significant. **Conclusion:** The present study shows majority of health care workers had adequate knowledge on Medication Management. Continuous monitoring and Audits are to be conducted periodically in every stage regarding medication management to reduce the incidence of medication errors. More importance should be put into the basic nursing education to improve the nurses knowledge on medication management to reduce the risk of errors.

**Key Words:** Medication Management, Accreditation Standards, Healthcare workers, Patient safety, medication errors.

### 1. INTRODUCTION

The main focus of all the Health care systems was on concealment rather than improvement till 2005.<sup>1</sup> But, today all health care systems focussing on establishment of standards of service and providing quality of care.<sup>2</sup> In order to have quality and standards in health care system it is very essential to have accreditation standards for medicatiuon management.<sup>3,4</sup> Now a days, accreditation

has gained worldwide attention, an effective tool for improving quality of hospital services and facilities. An accreditation standard enhances healthcare system to promote continuous quality improvement.<sup>5</sup> The accreditation standards related to medication management deals with organisational process and safety.<sup>6</sup> Management of Medication is an elaborate system that involves several stages which includes policies and procedures related to availability, safe storage, prescription, dispensing and administration of medication.<sup>7</sup> Medication management is a challenging and complex processes among health care professionals.<sup>7</sup> The primary aspect of medication management is avoiding medication errors which ensures patient safety.

The United States National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) defines a medication error as: “any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing, order communication, product labelling, packaging and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use”.<sup>8</sup> The third World Health Organisation (WHO) Global Patient Safety Challenge reported that Medication errors are the leading cause of injury and patient harm, disability and even death in health care systems across the world. Globally, the cost associated with medication errors has been estimated at \$42 billion USD annually.<sup>9</sup> The Economic Times states that World Health Organisation (WHO) came out with the estimation that nearly 138 million patients witness harm caused by medication errors every year, including India. In India 5.2 million medical errors occurs annually.<sup>10</sup> More than 80 per cent of the errors are linked to assembling, preparing and dispensing medications to patients.<sup>11</sup> The most common medication errors occurs at ordering or prescribing of medication which accounts for almost 50% of medication errors.<sup>12</sup> The crucial barrier for ordering and prescribing is communication. It might be due to verbal transmission of orders, orders written in illegible handwriting, or look-alike sound-alike (LASA) drugs. The resultant mistake could involve wrong patient, incorrect dose, incorrect route, incorrect medication itself.<sup>13</sup>

Management of medication in tertiary care hospitals requires excellent co-ordination between doctors, pharmacists, and nurses which can result in better outcome. Thus, the health care professionals plays a challenging role. For Excellent medication management in a tertiary hospital the health care professionals must ensure that they should possess adequate knowledge, skill and good co-ordination.<sup>14,15</sup>

Hence, the present study was conducted to assess knowledge of accreditation standards of medication management among healthcare workers.

## 2. MATERIALS AND METHODS:

This is a cross-sectional study carried out in Panimalar Medical College Hospital & Research Institute, Chennai, Tamil Nadu, India. A random sample of 370 health care workers including Doctors, Dentist, Nursing, Allied Health workers and pharmacists were responded. A semi-structured questionnaire comprising of 41 questions was developed by the researchers on demographic characteristics and medication management with reference to accreditation standards. Data was collected and analysed. The study protocol was approved by the Institutional Review Board (IRB) of the Panimalar Medical College Hospital & Research Institute, Chennai (Panimalar Medical College Hospital & Research Institute IRB #1/2020/010) and conformed to the requirements of the Declaration of Helsinki (as revised in Seoul 2008).

### Statistical Analysis:

Each question was numerically coded to obtain score for knowledge on medication management. All the demographical variables are presented as numbers and percentages. Descriptive statistics were presented as numbers and percentage and the data were expressed as Mean and Standard Deviation. Chi-square test was used to assess the association between demographic variables in the study and the level of knowledge of the respondents. Statistical significance was set at

$p < 0.05$ . All statistical analyses were performed using Statistical Package for Social Science (SPSS, version 17) for Microsoft Windows, SPSS Inc. USA.

### 3. RESULTS:

**Table I: Showing demographic variables**

<b>Demographic Variables</b>	<b>Frequency</b>	<b>Percentage %</b>
<b>AGE</b>		
18- 20 Years	47	12.7
21 – 25 Years	208	56.2
26 – 30 Years	48	13.0
> 30 Years	67	18.1
<b>SEX</b>		
Male	64	17.3
Female	306	82.7
<b>Profession</b>		
Medicine	4	1.1
Dentistry	3	0.8
Nursing	324	87.6
Allied Health Sciences	23	6.2
Pharmacy	16	4.3
<b>Educational Qualification</b>		
Diploma	70	18.9
Undergraduate	234	63.2
Post Graduate	66	17.8
<b>Professional Experience</b>		
Less than 6 Months	110	29.7
6 months - 2 Years	105	28.4
2 – 6 Years	95	25.7
7 – 10 Years	17	4.6
More than 10 Years	43	11.6

<b>Previous knowledge on medication management</b>		
Yes	297	80.3
No	73	19.7

**Table 2: Showing knowledge statements on Medication Management**

S.No	Knowledge Statements	YES		NO	
		n	%	n	%
1	Are you aware of NABH standards of Medication Management?	322	87.0	48	13.0
2	Do you think that hospital should have Standard Drug Formulary?	351	94.9	19	5.1
3	Does your hospital have Common Medical Prescription Abbreviations?	323	87.3	47	12.7
4	Do you think that the hospital should have approved list of drugs that can be ordered verbally?	260	70.3	110	29.7
5	Do you think it is not necessary to have licensed medicines to be procured in the hospital?	131	35.4	239	64.6
6	Do you think that it is necessary the Medication should be stored in specialized, labelled compartments?	360	97.3	10	2.7
7	Do you think medications storage doesn't need clean, well lit, and ventilated environment?	77	20.8	293	79.2
8	Are you aware that all the medications should be stored at the temperature specifications given by the manufacturer?	350	94.6	20	5.4

9	Do you think that it is not necessary to store the Narcotics under double lock and key?	117	31.6	253	68.4
10	Do you think that it is not necessary to stock adequate medications at all times?	93	25.1	277	74.9
11	Are you familiar with LASA drugs?	280	75.7	90	24.3
12	Do you know that storing Look-Alike, Sound-Alike drugs next to each other should be avoided?	321	86.8	49	13.2
13	Are you familiar with High-Risk Medications?	333	90.0	37	10.0
14	Are you aware that the High Risk Medication should be labelled in RED?	350	94.6	20	5.4
15	Do you know that First In And First Out (FIFO) should be applied for consumption of drugs?	292	78.9	78	21.1
16	Are you aware that Emergency medications should be replenished in a timely manner when used?	345	93.2	25	6.8
17	Do you think that it is not necessary to check the name of the drug and expiry date prior to dispensing?	110	29.7	260	70.3
18	Is it necessary that all hand written prescriptions must be written in capital letters, legible with generic name?	328	88.6	42	11.4
19	Do you think that in prescription of drugs it is not necessary to include the route, dosage, strength, time and frequency?	102	27.6	268	72.4

20	Are you aware that each prescription entry by the doctor should be signed, named, timed and dated?	364	98.4	6	1.6
21	Are you aware that all verbal orders shall be counter-signed by the same doctor within 24 hours of ordering?	351	94.9	19	5.1
22	Are you aware that the drugs should be administered only by registered nurses?	345	93.2	25	6.8
23	Do you think that the preparation of drugs before administration can be done by anyone?	124	33.5	246	66.5
24	Do you think that proper labelling is necessary in preparation of drugs?	363	98.1	7	1.9
25	Do you know that before administration of the drug the Registered Nurse should verify the patient by his Name /UHID No?	358	96.8	12	3.2
26	Are you aware that for safe medication administration the Registered Nurse should follow the rights of medication?	363	98.1	7	1.9
27	Do you know that after administration of drugs the registered nurse has to document in medication chart and nurses notes?	363	98.1	7	1.9
28	If any Drug Allergies occurs not necessary to report immediately to the concern authority.	105	28.4	265	71.6
29	Are you aware that in case of any adverse drug reactions or adverse drug event, stop medication immediately and report to the doctor immediately?	366	98.9	4	1.1

30	If any medication error occurs it is not necessary to report immediately to the Pharmacovigilance department.	93	25.1	277	74.9
31	Are you aware that Multiple Dose Vials must be discarded 28 days after it is opened?	313	84.6	57	15.4
32	Do you know that Vials marked as single dose should be discarded immediately after use?	354	95.7	16	4.3
33	Do you think that Corrective and/or preventive action(s) is necessary to reduce errors and adverse drug reactions?	356	96.2	14	3.8
34	Do you think that Weekly drug audits are not necessary?	108	29.2	262	70.8
35	Are you aware that drug audits should be conducted by Medical Superintendent and chief pharmacist?	350	94.6	20	5.4

**Table 3: Showing level of knowledge on Medication Management.**

KNOWLEDGE LEVEL	FREQUENCY	PERCENT
Inadequate Knowledge	2	0.5
Moderate Knowledge	80	21.6
Adequate Knowledge	288	77.8
<b>Total</b>	<b>370</b>	<b>100</b>

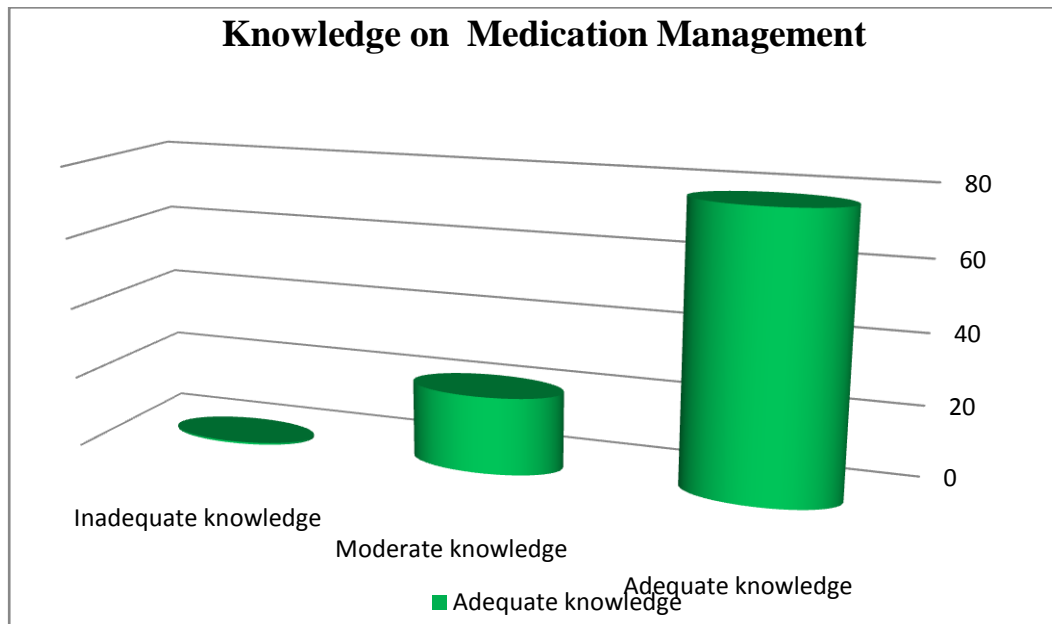
**Scoring:**

Inadequate Knowledge – less than 50

Moderate Knowledge – 51 to 75

Adequate Knowledge -76 to 100

**Figure 1: Level of knowledge on Medication Management among Healthcare Workers in Tertiary Hospitals.**



**Table 4: Association between knowledge on medication management with the demographic variables.**

Demographic Variables	Knowledge Level						Chi-Square Value
	Inadequate knowledge		Moderate knowledge		Adequate knowledge		
	No	%	No	%	No	%	
<b>Age Group</b>							p = 0.008
< = 20 Years	1	2.1	17	36.2	29	61.7	
21 - 25 Years	0	.0	45	21.6	163	78.4	
26 - 30 Years	0	.0	12	25.0	36	75.0	
> 30 Years	1	1.5	6	9.0	60	89.6	
<b>Gender</b>							p= 0.010
Male	1	1.6	22	34.4	41	64.1	
Female	1	0.3	58	19.0	247	80.7	



<b>Profession</b>							
Medicine	0	.0	3	75.0	1	25.0	p= 0.002
Dentistry	0	.0	2	66.7	1	33.3	
Nursing	1	0.3	66	20.4	257	79.3	
Allied Health Sciences	0	.0	8	34.8	15	65.2	
Pharmacy	1	6.3	1	6.3	14	87.5	
<b>Educational Qualification</b>							p = 0.003
Diploma	0	.0	22	31.4	48	68.6	
Undergraduate	0	.0	50	21.4	184	78.6	
Post Graduate	2	3.0	8	12.1	56	84.8	
<b>Professional Experience</b>							p =0.010
Less than 6 Months	0	.0	37	33.6	73	66.4	
6 months - 2 Years	1	1.0	22	21.0	82	78.1	
2 – 6 Years	0	.0	15	15.8	80	84.2	
7 – 10 Years	0	.0	1	5.9	16	94.1	
More than 10 Years.	1	2.3	37	5	11.6	86.0	
<b>Previous knowledge on medication management</b>							p =0.215
Yes	1	0.3	60	20.2	236	79.5	

No	1	1.4	20	27.4	52	71.2	
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Out of 370 responders, majority(82.7%) of them were females and 17.3% were males. Majority (56.2%) were between the age group of 21-25 years, 18.1% were >30 years, 13% were 26-30years and 12.7% 18-20 years. 87.6% were Nursing, 6.2% belongs to Allied Health Sciences, 4.3% were Pharmacists, 1.1% belong to medicine and 0.8% were Dentists. Most(63.2%) of them were undergraduates,18.9% were diploma and 17.8% were postgraduates. 29.7% of participants had less than 6 months experience followed by 28.4% with 6months to 2 years, 25.7% with 2 to 6years, 11.6% with more than 10 years and 4.6% had 7 to 10 years of professional experience. Majority(80.3%) of the respondents had previous knowledge on medication management. (Table 1) 77.8 % had adequate knowledge, 21.6% had moderate knowledge and 0.5% had inadequate knowledge on medication management(Table 2&3, Figure 1). The average mean knowledge of the study participants was 30.00±4.031. Association between knowledge of medication management with demographic variables were statistically significant(Table 4).

#### 4. DISCUSSION:

Medication Management is of top most priority and an important part of patient's care in Health care sectors. Medication Management should be an important concern as it facilitates in reducing mortality, morbidity and improving quality of patient's care. Developing countries are still lacking good health-care systems and shortage of health-care professionals which results in occurrence of medication errors. A total of 370 healthcare workers were included in the study, out of whom (82.7%) were female and (17.3%) were male. The majority (56.2%) of the respondents were in the age group of 21-25 years. Among 370 respondents 87.6% were Nursing. 80.3% respondents had previous knowledge on medication management. Majority(77.8%) of the respondents had adequate knowledge on medication management which is in similarity with other studies.<sup>16,17</sup> This might be due to the reason that they already had previous knowledge on medication management. In contrast, majority had no adequate knowledge on medication management in few studies.<sup>18,19,20</sup> This gap in knowledge on medication management will enhance by proper training and education on communication, prescription ,dispensing, labelling and administration of drugs among health care professionals.

The demographic characteristics age, sex, profession and professional experiences were statistically significant with level of knowledge which was in comparison with other studies.<sup>18,21</sup> The professional experience in clinical areas and their skills will upgrade their knowledge level.

#### 5. CONCLUSION:

The present study shows majority of health care workers had adequate knowledge on Medication Management. Continuous monitoring and Audits are to be conducted periodically in every stage regarding medication management to reduce the incidence of medication errors. Organising effective Continuous Medical Education and Continuous Nursing Education and adhering the accreditation standards on Medication Management will provide quality of care to the patients. More importance should be put into the basic nursing education to improve the nurses medication knowledge and reduce the risk of errors.

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**Conflict of Interest: None**

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