

## RESEARCH ARTICLE

# Knowledge, Attitude and Practice of Pharmacist about Inpatient Medication Therapy Management Services: National Cross-Sectional Study

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## ABSTRACT

**Background:** Medication therapy management is a patient-centered process to create treatment plans centered on each patient's medication-related goals. It requires collaboration between pharmacists, patients, and other health care providers to ensure the safe and effective use of medicines.

**Objectives:** assessment of Iraqi hospital pharmacists' knowledge, attitude, and practice on MTMs providing.

**Methods:** The cross-sectional study was conducted in seven Iraqi hospital pharmacists' using a structured questionnaire delivered online.

**Results:** A total of (90) pharmacists were enrolled in the study, (86.66%) between the age of (20–30) years old, (63.33%) females, (93.33%) with bachelors degree and (90%) inpatient pharmacist setting with (96.66%) of total pharmacist had 0–10 years of experience. Most pharmacists (56.66%) had a high level of knowledge and positive attitudes toward MTMs. Furthermore, pharmacists believed that MTM services might increase the quality of health care (83.33%), and (90%) were interested in acquiring more information about MTM service. On the contrary, obstacles identified by pharmacists that might affect MTM services (MTMs) implementation, the most common were lack of training (80%), lack of private counseling area (73.33%), hence, needing for more time spending during patients' counseling (63.33%).

**Conclusion:** Providing insights about the hospital pharmacists revealed that most of them have good knowledge, positive attitude, and inadequate practice regarding MTM service.

**Keywords:** Attitude, Hospital Pharmacist, Knowledge, Medication Therapy Management, Practice,

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## INTRODUCTION

Clinical pharmacists unique qualified members in medication therapy management: assist patients, physicians, and other health-care professionals with complete drug management, besides their intervention documentation outcomes including economic, humanistic-related quality of life (QoL), patient well-being, medication appropriateness, and management of drug related problems (DRPs).<sup>1,2</sup> With limited resources and hospitals attempting to completely adopt medication reconciliation, it may seem sensible to focus on patients who will benefit the most from medication reconciliation assistance.<sup>3</sup>

Pharmacists are expected to collaborate and communicate with other health care providers, and the patient health record is an essential medium for such professional communication.<sup>4</sup>

Paper sheets, online resources, and mobile technology-type documents have allowed for convenient and quick access to medical information. However, pharmacists should critically evaluate all resources before; ensuring accuracy, current, and unbiased.<sup>5</sup> In addition, pharmacists can collaborate with those in the organization to ensure that existing tools are accessible to help with a range of drug knowledge requests.<sup>6,7</sup>

A comprehensive pharmacy program includes participation in programs that promote good health and prevent disease in the population. When treating illness, the consistency of and person's medicine use process should be ensured to maximize therapeutic benefit while avoiding unfavorable side effects. This requires pharmacists to take mutual responsibility for treatment results with other practitioners and patients.<sup>8</sup> Particular populations, such as the elderly, mothers and infants,

chronically ill patients, and the community, benefit from this definition. Although the basic principles of pharmaceutical care and good pharmacy practice are almost similar, good pharmacy practice is how pharmaceutical care is implemented.<sup>9</sup>

Clinical pharmacists in Iraqi are willing to maximize patient pharmaceutical care.<sup>10</sup> Clinical pharmacy services are patient-centered, designed to encourage rational medication usage and, more particularly, to optimize therapeutic impact while minimizing risk and expense and respecting patient choice.<sup>11</sup> The graduated pharmacists with a bachelor's degree can join a clinical pharmacy program for about twelve months with extensive training at teaching hospitals, legally forced to perform as clinical pharmacists for 5 years as needed; it is a successful program. Board certification in clinical Pharmacy may represent the leading step in enhancing the medical profession to improve patients' health care in Iraqi hospitals.<sup>12</sup>

Medication therapy management (MTM) has a direct relationship to pharmaceutical care. Therefore, MTM has been described as a service provided in pharmaceutical care practice.<sup>2</sup> However, both patient self-care and medication reconciliation are critical aspects of any MTM encounter regardless of the setting (i.e., inpatient, community, ambulatory, or institutional facilities).<sup>13</sup>

MTM service is divided into three stages. Adherence to Management is the first stage. Pharmacists ensure that patients take their drugs as prescribed for a certain condition, such as diabetes. To apply this level, pharmacists must have a basic understanding of clinical medicine. Adherence Management is critical for improving health outcomes and lowering expenses associated with non-adherence. Interventions for drug-related issues is the second level. At this level, pharmacists employ the medication therapy review services to ensure that all drugs used by patients are safe and effective. Disease state management service is the third and highest level of MTM services. Pharmacists at this level cover all chronic illnesses for which a patient has been diagnosed. Pharmacists take engage in drug-related issue treatments as well as non-drug therapy, lifestyle changes, and other activities that help people live healthier lives.<sup>14</sup>

MTM also covers services like detecting any adverse medication reactions connected with the patient's therapy, as well as disease state management.<sup>14,15</sup>

The aim of this study includes evaluating the knowledge, attitude, and practice (KAP) among Hospital Pharmacists for pharmacists attend MTMs.

## METHODS

The current study was an interventional study to cover cross-sectional data collected from hospital pharmacists' responses who were awarded postgraduate clinical pharmacy course certificate by the higher committee of clinical pharmacy in the Ministry of health and continue their practice as competent clinical pharmacists among different inpatient settings.

Ethical approval of the study was obtained from the scientific, ethical committee off Almustanssiryah College

of Pharmacy and the agreement certificate of various Iraqi hospitals of Baghdad and Al. Nasirriyah governorate. In addition, data were collected retrospectively for the last three years (2018, 2019 and 2020) from seven hospitals located in Baghdad and Nasiriyah governorate.

This cross-sectional study explored KAP 2 of selected pharmacists who were an employee in those seven hospitals towards pharmacists-led interventions of the pharmaceutical care issues or DRP, particularly those whom documented their interventions during these previous three years and agreed to participate with the designed survey. A convenience sample of 210. Pharmacists within those seven hospitals distributed between Baghdad and Nasiriyah province were enrolled in the study survey.

Any pharmacists who did not document their interventions or refused to participate in the study during their search period were excluded. Minor modifications were done locally based system. Three specialist pharmacists examined the validity of the survey questionnaire. The principles of Structured survey (KAP) are available in the Malaysia study.<sup>2</sup>

## RESULTS

### Characteristics of Participated Pharmacist

A total of 90 pharmacists participated in this interventional part of the current study. Among 210 survey questionnaires, forms were distributed, with 90 of them being returned, yielding a response rate of 78.26%. The frequency of females participants represented the majority of respondents (63.33%). Most respondents were between 20–30 years old (86.66%) awarded a bachelor's degree (93.33%). The practice area of respondents were predominantly inpatient pharmacists (90%), and the (96.66%) of them had less than ten years of experience.

### Pharmacists' Knowledge of the MTMS

A structured survey of ten questions was used to explore pharmacists' awareness of MTM services. The majority of respondents correctly answered most of the questions, indicating that pharmacists were well-versed in MTM services. A 93.33% had adequate knowledge about MTM definition, A 86.66% aware about critical elements of the MTM service, A 96.66% knowledgeable about the three purposes of drug therapy management services, up to (86.66%) agree that providing a clinic for adherence to drug therapy (MTAC) decrease overall hospital visits, cost, helps in maximizing the benefits of medications, and provide good information source, though, it did not represent the central part of pharmacy practice up to their knowledge (66.66%), nor the benefit of herbal products (63.33%) (Table 1).

### Distribution of Knowledge Level Regarding MTMS

Table 2 explored the participants' level of understanding of the MTM services, most of participants (56.66%) were classified as having a high level of knowledge, followed by those with a moderate levels of knowledge (23.33%), and 20% of pharmacists were with a low level of knowledge.

**Table 1:** Pharmacists' knowledge regarding MTMS questionnaire

Question	Correct answer	Incorrect answer
MTM is described as a service or a collection of services that: improve treatment results for specific patients.	84(93.33)	6(6.66)
2. Medication Therapy Review (MTR), Personal Medication Record (PMR), Medication-Related Action Plan (MAP), Intervention or Referral, Documentation, and Follow-Up are the core aspects of MTM services.	78(86.66)	12(13.33)
3. The three aims of medication treatment management services are to enhance drug comprehension, medication adherence, and the identification of medication-related issues.	87(96.66)	3(3.33)
4. MTM service may be beneficial to patients who take prescription and nonprescription medicines, herbal items, or other dietary supplements.	33(36.66)	57(63.33)
5. The MTM service's main purpose is to help with adherence and illness management.	66(73.33)	24(26.66)
6. MTAC has been implemented by the Iraqi Ministry of Health?	30(33.33)	60(66.66)
7. MTAC aids in optimizing pharmaceutical benefits and evaluating therapeutic results.	72(80)	18(20)
8. MTAC can reduce emergency department visits and total healthcare expenditures associated with chronic illnesses.	63(70)	27(30)
9. MTAC promote patient's satisfaction	45(50)	45(50)
10. MTAC good information resource for patients.	78(86.66)	12(13.33)

**Table 2:** Distribution of knowledge level

Levels	No.	Percentage (%)
Total	90	100
High scores (8–10)	51(27F, 24M)	56.66
Moderate scores (6–7)	21(15F, 6M)	23.33
Low scores (0–5)	18(15F, 3M)	20

### Distribution of Knowledge Level According to pharmacist Characteristic

As in Table 3, the pharmacist had a high level of knowledge are mostly female (30%), younger pharmacists in the age group of 20–30 years old (54.44%), pharmacists with a bachelor's degree (51.11%), and having less than ten years of experience (54.44%). Furthermore, inpatient pharmacists had a high degree of awareness (48.88%).

Data presented as (n) number and (%) percentage. Chi-Square test was performed for categorical data.  $p$ -value  $\geq 0.05$  is considered non significant,  $p$ -value  $< 0.05$  is considered significant

### Pharmacists Attitude Towards the Management Service for Drug Therapy

Table 4 represents the statements of assessing Pharmacists' attitude towards the management service, where most of the answers were positive by most pharmacists. Many respondents (90%) thought that a pharmacist's position goes beyond dispensing medication, and patients would gain more information about their chronic illnesses and medications if MTM services were used (83.33%) by considering the core elements services. Also (76.66%) agreed that medication monitoring by a pharmacist would improve patient health outcomes, particularly by expertise than basic pharmacy

practice details (93.33%). Moreover, (70%) of pharmacists agreed that using MTM service would enable pharmacists to engage in inpatient care on a broader scale.

### Pharmacists' Practice Towards MTMS and Barriers that Affect MTM Service Implementation

Pharmacists' practice and obstacles that affect the MTM services implementation questionnaire were shown in Table<sup>5</sup>. Pharmacists positively expressed interest in offering MTM services in the future (76.66%), and if implemented, the MTM services improves the efficiency of health services (83.33%). Furthermore, the majority of them (90%) were willing to learn more about the MTM service. Attending live workshops provide (33.33%) vs. online education (43.33%); meanwhile, probably enough time would be available with MTM programs in the future (56.66%). Easy accessing (online) to the guidelines and drug information resources available for diseases was positively answered by (60%), need of high budget was yes by (40%) only, with only (24.44%) of pharmacists accessed to online and retrieved most updated guidelines for the treatment of diseases like hypertension and hyperlipidemia.

Barriers identified by pharmacists that might affect MTM-services implementation, the most common; were lack of training (80%), lack of private counseling area (73.33%), Spending enough time for patient counseling was disagreed by (63.33%).

### DISCUSSION

Clinical pharmacists are the only healthcare professionals officially qualified as MTMs providers. This position has been extended to include more services, such as patient consultation, improving patient adherence, and detecting any medication therapy problems (MTPs).<sup>16</sup> In the current study, selected pharmacists were employees in those three general hospitals who documented their interventions during these

**Table 3:** Distribution of knowledge level according to pharmacist characteristic

<i>Characteristic</i>	<i>Knowledge level (low)</i>	<i>Knowledge level (moderate)</i>	<i>Knowledge level (high)</i>	<i>p-value</i>
Total	18(20)	21(23.33)	51(56.66)	
Gender				
Male	3(3.33)	6(6.66)	24(26.66)	0.048
Female	15(16.66)	15(16.66)	27(30)	
Age				
20–30	18(20)	20(22.22)	49(54.44)	0.667
31–40	0(0)	1(1.11)	2(2.22)	
Degree				
Bachelor's	18(20)	20(22.22)	46(51.11)	0.330
Master	0(0)	1(1.11)	5(5.55)	
Pharmacy practice setting				
Clinical pharmacist	1(1.11)	1(1.11)	5(5.55)	0.673
Inpatient pharmacist	17(18.88)	20(22.22)	44(48.88)	
Pharmacist working at	0(0)	0(0)	2(2.22)	

previous three years. They were assessed online using the (KAP) structured survey adopted from a Malaysian study and validated by three specialist pharmacists.<sup>2</sup> Pharmacists were of age group range between 20–29 years, predominantly female, most of them carry Bachelor degree, and (96.66%) of them having less than 10 years of job experience and practice, which is pretty enough to bring the whole experience to work within inpatient pharmacy practice settings. In most of the previous studies, a pharmacist under survey possessed nearly similar characteristics in respect to age, gender, awarded a degree, working experience.<sup>2,17,18</sup>

The current finding showed that 56.66% of the participated pharmacists possessed an overall high level of knowledge regarding MTM service. A 23.33% with moderate knowledge and only 20% with a low level of knowledge. Most of them had adequate knowledge about MTM definition, were aware of key elements of the MTM service, we're aware of the three purposes of drug therapy management services, and the importance of providing a clinic for adherence to drug therapy (MTAC). Moreover, participants who responded with a high level of knowledge mainly were female ( $p$ -value < 0.05), younger pharmacists aged 20 to 30 years old, inpatient pharmacists with a Bachelor's degree, and up to 10 years of practice experience in MTM service.

This finding may be because most of the patient care duties within Iraqi hospitals are assigned to the recently graduated pharmacists with bachelor's degrees who enrolled in the postgraduate clinical pharmacy program; this training turns them a good level of pharmacists' knowledge about MTM services. Previous research found a significant difference in total KAP score between female pharmacists with (0–10) years of experience and those with (11–20) years of experience, indicating that those with greater experience had a higher total KAP score.<sup>2</sup>

Previous studies in developing countries explored the pharmacist knowledge both in the community or in hospital settings concerning MTM services, one systematic review in Saudi Arabia showed inadequate knowledge of community pharmacists towards patient-centered care.<sup>19</sup> Meanwhile, Lebanese community pharmacists had adequate knowledge of MTMs,<sup>20</sup> the finding enforced by another cross-sectional survey where (94%) of hospital pharmacists had good knowledge about MTM<sup>21</sup>.

Despite the long-standing implementation of the Pharm D program in the USA, students at Iowa college of Pharmacy showed good basic knowledge, and about (60%) of students agreed that they intended to provide MTM services. Still, this agreement dropped to 37% when they were asked if

**Table 4:** Pharmacists attitude about the management services for drug therapy statements

<i>Statements</i>	<i>Strongly agree / Agree</i>	<i>Neutral</i>	<i>Disagree/ strongly disagree</i>	<i>Mean</i>
1- Aside from regular dispensing responsibilities, pharmacists' involvement in preventing adverse effects include evaluating patients' drug profiles and suggesting treatments.	81 (90)	9 (10)	0 (0)	4.26
2- Patients would obtain appropriate and helpful information regarding their chronic disease(s) and pharmaceutical treatments from their doctors if MTM service was used.	75 (83.33)	12 (13.33)	3 (3.33)	4.13
3- Do you think that MTM service is beneficial when you examine the five key aspects of MTM service: Medication Therapy Review, Personal Medication Record, Medication-Related Action Plan, Intervention or Referral, Documentation and Follow-Up?	75 (83.33)	15 (16.66)	0 (0)	4.1
4- When a pharmacist monitors a patient's medicines, the patient's health results are better than when other health care practitioners are involved?	69 (76.66)	12 (13.33)	9 (10)	4.13
5- Applying MTM services needs more than a fundamental understanding of pharmacy practice.	84 (93.33)	3 (3.33)	3 (3.33)	4.46
6- Pharmacists have a unique potential to contribute in inpatient treatment on a wider scale by providing MTM services.	63 (70)	15 (16.66)	12 (13.33)	3.96

Data presented as (n) number and (%) percentage.

**Table 5:** Pharmacists' practice and obstacles that affect MTM services implementation;

<i>Question</i>	<i>Yes</i>	<i>No</i>
1. Would you wish to be an MTM service provider if the MTM service is deployed in the future?	69 (76.66)	21 (23.33)
2. Do you believe that adopting MTM services in the future will be necessary to improve health quality?	75 (83.33)	15 (16.66)
3. Are you looking for additional information on how to provide MTM services?	81 (90)	9 (10)
4. Is it possible to train pharmacists through online education?	39 (43.33)	51 (56.66)
5. Do you like to teach pharmacists in person at live workshops?	30 (33.33)	60 (66.66)
6. Do you believe you spend enough time counseling your patients in your present practice?	33 (36.66)	57 (63.33)
7. Do you believe you will have enough time in the future to use the MTM service?	51 (56.66)	39 (43.33)
8. Pharmacy or the place that you work in: currently have a Private counseling-area?	24 (26.66)	66 (73.33)
9. Do you have simple access to guidelines and medication information resources such as Micromedex, Clinical Pharmacology, and others (either online or in paper copy)?	54 (60)	36 (40)
10. Is a lack of training one of the major roadblocks to using MTM services in the future?	72 (80)	18 (20)
11. Do you believe that using MTM services necessitates a large budget??	36 (40)	54 (60)
12. Do you often consult the most up-to-date treatment guidelines for illnesses like hypertension or hyperlipidemia (online or in print)?	22 (24.44)	68 (75.55)

Data presented as (n) number and (%) percentage.

they were willing to take an initial step to provide MTM.<sup>22</sup> Although those findings were in line with other studies, where 143 respondents were aware of MTM services, and (65%) were currently practicing MTM, also the majority agreed that pharmacists should provide MTM and have the ability to do so.<sup>23</sup>

In the current study, most pharmacists (90%) had positive attitudes toward MTM services since they thought that a pharmacist's position goes beyond dispensing medication and practicing. As a result, MTM services would gain more information about their chronic illnesses and medications. Also agreed that a pharmacist's medication monitoring would improve patient health outcomes; hence, (93.33%) need more expertise than basic pharmacy practice to enable pharmacists to engage in inpatient care on a broader scale.

The Herbert. *et al.* research looked at the likelihood of pharmacists providing medication therapy management services and found that 86.2% of respondents believed that adopting MTM services would help them offer better care to their patients.<sup>24</sup> comparable findings in a cross-sectional survey investigate pharmacists' attitudes, efforts, interests, and challenges in delivering MTM revealed that the pharmacists had slightly positive attitudes toward the provision of MTM. However, we're very interested in providing some MTM services.<sup>25</sup> In addition, Iranian pharmacists showed a high level of attitude regarding counterfeit medications.<sup>26</sup> Moreover, a survey that targeted 550 institutional pharmacists and 250 community pharmacists in Saudi Arabia revealed a positive attitude toward pharmaceutical care services.<sup>27</sup>

The other section in the current survey explored the participant's level of practicing MTM services, where most pharmacists would like to be MTM services providers if the process is implemented in the future. A 90% interested in learning more information about MTMs, this finding revealed that most pharmacists interested in optimizing their behavior toward MTM practicing, which would increase the quality of health services, though only 60% of them agreed that have easy access to online hard copies provides them with disease guidelines, leading to speculation that they possess inadequate practice.

Independent pharmacists, those with adequate documentation systems, and those who had previously provided patient care services were more confident in providing MTM, creating a personal medication record, and performing intervention and referral in a previous study, but only somewhat satisfied in making a medication action p.<sup>28</sup>

Moreover, previous systemic reviews support the value of community pharmacist-led medication review to improve a range of clinical outcomes, though conflicting findings were reported concerning hospitalization and reduced mortality.<sup>29</sup> Iranian study showed that community pharmacists had low practice levels toward good pharmacy practice approach.<sup>30</sup> Another Indonesian research is also in line with current key findings where the moderate practicing level of community pharmacists toward MTMs.<sup>31</sup>

Three potential obstacles in practicing MTM services were assessed in the current survey; lack of training restricted private counseling area, and need for time. The majority of pharmacists, up to 63.33% reported that they do not have enough time to spend with their patients since their primary services in hospital wards in current practice are restricted to drug distribution and daily unit dose administration, which would not provide enough time for patient care services. The MTM services were introduced to expand pharmacists' services beyond their everyday responsibilities.<sup>32</sup> To obtain the greatest therapeutic outcomes for each patient, MTM services necessitate collaboration amongst all healthcare professionals 16 particularly, pharmacist-nurse partnership in improving patient's medication adherence.<sup>33</sup>

The current finding is not much in agreement with another study in developed countries, where lack of time and support was the significant barrier to practice in MTMs.<sup>24</sup> Nevertheless, the pharmacists will be able to engage more with their patients in the future if they use MTM services because they will be responsible for all of their patient's conditions and will need to consult with other healthcare professionals to make the best decisions.<sup>34</sup>

## CONCLUSION;

The current survey findings provided some insights into the Hospital pharmacists' knowledge, attitude, and practices regarding MTM services in the national hospitals. Most of them with a good level of knowledge showed positive attitudes; hence, inadequate practice regarding MTM services mainly attributed to lack of training restricted private counseling area, and need more time with patients.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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