

## Original Research

# Patient satisfaction with medication therapy adherence clinic services in a district hospital: a cross-sectional study

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### Abstract

**Background:** Patient satisfaction is one of the essential indicators for assessing the quality of healthcare services being delivered, including pharmacy ambulatory care service, as it determines the practicability and sustainability of the service provided. As such, pharmaceutical care services provided during medication therapy adherence clinic (MTAC) sessions need to be assessed to maximise its effectiveness and benefits to the patients.

**Objective:** This study aimed to assess the association between patient satisfaction and socio-demographic characteristics, as well as the predictors for patient satisfaction.

**Methods:** This was a cross-sectional study conducted at the medical outpatient department in Hospital Port Dickson from January until October 2019. Convenience sampling method was used to recruit potential study participants. Patient satisfaction was measured using Validated Patient Satisfaction with Pharmacist Services Questionnaire (PSPSQ2.0), consisted of quality of care and interpersonal relationship between pharmacist and patient domains. Descriptive data were presented as mean and standard deviation or numbers and percentages, while Independent Sample t-test, ANOVA and post-hoc analysis, and multiple linear regression were used for inferential data analysis.

**Results:** There were 37 (25%) diabetes MTAC, 36 (24.3%) respiratory MTAC, and 75 (50.7%) warfarin MTAC patients recruited. On average, the mean overall satisfaction score was 3.30(SD=0.43). The mean satisfaction score in the interpersonal relationship domain [3.35(SD=0.44)] was higher than the quality of care domain [3.26(SD=0.45)]. There was a significant association between gender, education level, and patient satisfaction towards pharmaceutical care service ( $p<0.05$ ). Gender and education level statistically predicted respondents' satisfaction with MTAC services ( $p<0.001$ ).

**Conclusions:** The overall patient satisfaction towards MTAC services in this setting was high. Gender and education level were significant predictors for patient satisfaction. These findings could potentially contribute to the planning of MTAC services in the future.

### Keywords

Patient Satisfaction; Pharmaceutical Services; Pharmacists; Diabetes Mellitus; Ambulatory Care; Ambulatory Care Facilities; Outpatients; Race Factors; Age Factors; Sex Factors; Multivariate Analysis; Cross-Sectional Studies; Malaysia

## INTRODUCTION

The medication adherence clinic (MTAC) was initiated in 2004 as the first pharmacist-managed clinic in Malaysia.<sup>1</sup> In recent years, thirteen types of MTACs were established by the Ministry of Health (MOH) Malaysia to cover a broad range of diseases, e.g., diabetes mellitus, cardiovascular, respiratory diseases, etc.<sup>2</sup> Among all the MTAC services, Diabetes MTAC (DMTAC), Respiratory MTAC (RMTAC), and Warfarin MTAC (WMTAC) were the earlier ones started in Malaysia.<sup>1</sup> In general, MTAC services was implemented to improve patient understanding and adherence to medications. Through this service, pharmacists play a pivotal role in assessing medication knowledge and compliance, identifying medication-related problems, and make recommendations for therapy when necessary.<sup>3-6</sup> For example, pharmacists in DMTAC will assist diabetic patients to achieve better glycemic control to prevent diabetes-

related complications, whereas RMTAC focuses on managing patients with asthma and chronic obstructive pulmonary disease.<sup>7,8</sup> Pharmacists in WMTAC mainly counsel and review the patients' internationalised normalisation ratio at each clinic visit and adjusts the warfarin dose accordingly.<sup>9</sup> Patient satisfaction with pharmaceutical care services has gained increased awareness in the last two decades.<sup>10</sup> It is an essential determinant for healthcare services quality and health outcomes provided by the pharmacist.<sup>10,11</sup> Patient satisfaction is defined as a subjective evaluation of healthcare services against patients' personal preferences and expectations.<sup>12</sup> Studies have shown that satisfied patients are more likely to maintain a positive relationship with healthcare providers and adhere to their treatment.<sup>13</sup> In addition, patients with high satisfaction have been reported with better health outcomes because they take the initiative in their own care and comply with medical advice.<sup>14</sup>

Evaluating patient satisfaction on MTAC services could assist pharmacists in improving healthcare service delivery more effectively. Pharmacists can determine the extent to which their service has reached patients' needs and identify aspects that failed to meet their expectations. Subsequently, intervention to enhance patient satisfaction level can be taken to improve the inadequacies identified. In this context, William (2003) had shown that evaluating

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patient satisfaction could be divided into a qualitative and quantitative survey; however, a quantitative survey with a questionnaire was the essential indicator of measuring patient satisfaction in a medical setting. Patient satisfaction questionnaires were widely used in the National Health Service (NHS) during the 1980s.<sup>15</sup>

In Malaysia, most of the studies regarding patient satisfaction were mainly focused on one type of MTAC service, namely Diabetes MTAC and Retroviral MTAC.<sup>3-5</sup> Patient satisfaction in other MTAC services has remained unanswered. Therefore, this study was conducted to determine patient satisfaction level towards pharmaceutical services provided by three types of MTAC, Diabetes MTAC (DMTAC), Respiratory MTAC (RMTAC), and Warfarin MTAC (WMTAC) in Hospital Port Dickson (HPD). Besides, the association between patient satisfaction and socio-demographic characteristics, and the predictors for satisfaction were assessed in the study.

## METHODS

### Study design and setting

This cross-sectional study was carried out at Medical Outpatient Department (MOPD) in HPD from January 2019 until October 2019 by using a convenience sampling method. The study protocol was approved by the Medical Research Ethics Committee (MREC) (KKM/NIHSEC/P19-975 (6)), Ministry of Health Malaysia, and registered under the National Medical Research Registry (NMRR-19-175-45942). HPD is the main hospital caring for an estimated 1.13 million of the population in the Port Dickson district of Negeri Sembilan, located in the west of Peninsular Malaysia.<sup>16</sup> In this hospital, DMTAC, RMTAC, and WMTAC services are provided by trained pharmacists using approved MTAC protocols with a physician advisory. During each MTAC session, pharmacists would spend 15-30 minutes with every patient to explain and discuss their disease and medications management. Any medical- or drug-related issue would be further discussed with physicians before implementing changes in the treatment plan.

### Study subject

The target population in this study was patients follow-up in the Medical Outpatient Department (MOPD). The inclusion criteria were patients who participated in MTAC services at least four times, aged 18 years old and above, and Malaysian citizens who could communicate in Bahasa Malaysia or English languages. Patients with cognitive impairment were excluded from this study. By using a 5% margin of error, a 95% confidence interval, response distribution at 87%, and accounting for 472 patients in three MTAC services, the total sample size was calculated to be 128 respondents.<sup>3</sup> An additional 20% were included to account for dropouts, bringing a total of 153 study subjects required.

### Study instrument

In this study, a self-administered questionnaire consisted of two sections was used. Section A included the demographic characteristics of the study participants, such as gender, age, race, education level, marital status, employment

status, and monthly income. Types of MTAC attended and the number of visits to MTAC services was documented as well. Section B was about patient satisfaction with MTAC service. Patient satisfaction was determined using validated Patient Satisfaction with Pharmacist Services Questionnaire (PSPSQ 2.0) in English, and Bahasa Malaysia languages, adapted from Hassali and colleagues (2018). Permission to use the questionnaire was obtained from the corresponding author before the start of the study. PSPSQ 2.0 is comprised of sixteen items with two domains that measure the quality of care (10 items) and the interpersonal relationship between pharmacist and patient (6 items). These items are scored on a four-point Likert scale ranging from 1 "had no expectations", 2 "did not meet my expectations", 3 "met my expectations" to 4 "exceeded my expectations". A higher score denoted greater satisfaction with pharmaceutical care on MTAC services.<sup>14</sup> Before administering the questionnaire to the study participants, it was pilot tested among 30 MTAC patients: 10 from DMTAC, 10 from RMTAC, and 10 from WMTAC. Cronbach's alpha values were alpha=0.798 for the quality of care domain, alpha=0.640 for the interpersonal relationship domain, and alpha=0.806 for the whole tool. Overall, Cronbach's alpha coefficient for the whole tool was higher than the recommended  $\geq 0.70$ .<sup>17</sup> Data from the pilot test would not be included in the final result.

### Data collection

A self-administered questionnaire was used for data collection in this survey. Before recruitment, the researchers explained the objectives of the study to potential study participants. Subsequently, written consent for participation was taken from the respondents. Each respondent would take approximately 10-15 minutes to complete the questionnaire. They were assisted by researchers while filling up the questionnaires if necessary. All respondents retain the right to withdraw during the study period.

### Statistical analyses

The collected data were analysed with IBM SPSS Statistics version 23.0. Descriptive analysis was performed for all variables. The categorical variables were shown in frequencies and percentages, while continuous variables were presented in mean and standard deviation. The t-test and ANOVA test were used to analyse the association between socio-demographic and socio-economic of a patient and the total score of patient satisfaction. Evaluation of the factors affecting patient's satisfaction with MTAC services was established with multiple linear regression. A p-value  $<0.05$  was considered statistically significant.

## RESULTS

A total of 155 patients were approached, of whom 148 patients agreed to participate, giving a response rate of 95.5%: 37 from DMTAC, 36 from RMTAC, and 75 from WMTAC. Among the respondents, 68 (45.9%) were male, and 80 (54.1%) were female. More than half of the respondents (n=85, 57.4%) were from the age group 60 years and above with married status (n=141, 95.3%). Of the total, 96 (64.9%) were Malay, 18 (12.2%) were Chinese, and

Characteristics	n (148)	Percentage (%)	
Gender	Male	68	45.9
	Female	80	54.1
Age (years)	<40	10	6.8
	40-49	21	14.2
	50-59	32	21.6
	>60	85	57.4
Race	Malay	96	64.9
	Chinese	18	12.2
	Indian	33	22.3
	Others	1	0.7
Education level	Primary and below	57	38.5
	Secondary	76	51.4
	Tertiary and above	15	10.1
Marital status	Single	7	4.7
	Married	141	95.3
Employment status	Employed	40	27.0
	Unemployed	108	73.0
Monthly income	< MYR 1000	109	73.6
	MYR 1001- 2000	23	15.5
	MYR 2001- 3000	8	5.4
	MYR 3001- 4000	5	3.4
	MYR 4001- 5000	1	0.7
	> MYR 5001	2	1.4
Type of Clinic	DMTAC	37	25.0
	RMTAC	36	24.3
	WMTAC	75	50.7

33 (22.3%) were Indian. Most of the respondents had secondary education (n=76, 51.4%) and were unemployed (n=108, 73%) with a monthly household income of RM1000 and below (n=109, 73.6%). Majority of respondents 75 (50.7%) were from Warfarin MTAC, 37 (25.0%) were from

DMTAC and 36 (24.3%) were from RMTAC. Demographic characteristics for respondents were shown in Table 1.

The Cronbach's alpha values among 148 respondents were alpha=0.910, alpha=0.924, and alpha=0.948 for the quality of care domain, interpersonal relationship domain, and pooled 16 items, respectively.

The mean satisfaction score for each domain according to socio-demographic variables were shown in Table 2. In general, the mean satisfaction score in the interpersonal relationship domain [3.35 (SD=0.44)] was higher than the quality of care domain [3.26 (SD=0.45)]. Based on the independent-sample t-test, there was a significant association between gender and service satisfaction. Female respondents perceived a significantly higher overall service satisfaction [3.38 (SD=0.41)] than male respondents [3.20 (SD=0.43)], p=0.015. One-way ANOVA test showed significant differences among respondents with different education levels. Respondents with a tertiary education level exhibited higher overall service satisfaction [3.49 (SD=0.37)] than those with primary and below education level [3.18 (SD=0.41)], p=0.015. However, there were no significant differences in the post hoc test. This study indicated that age, race, monthly income, and employment status did not have a significant association with overall patient satisfaction score. However, respondents with employed status [3.39 (SD=0.44)] showed only significant association with service satisfaction in the quality of care domain compared to unemployed respondents [3.22 (SD=0.45)], p=0.043. Multiple linear regression showed that gender and education level statistically predicted respondents' satisfaction with MTAC services,  $F(2,145)=8.225$ ,  $p<0.001$ ,  $R^2=0.102$ . Satisfaction score was equal to  $3.077 + 0.167$  (education level) +  $0.183$  (gender), where education level was coded as 0=primary or lower, 1=secondary, 2=tertiary and above; gender was coded as 0=male, 1=female (Table 3).

Variables	Patient satisfaction score in quality of care		Patient satisfaction score in interpersonal relationship		Overall Satisfaction Score	
	Mean (SD)	p-value <sup>a</sup>	Mean (SD)	p-value <sup>a</sup>	Mean (SD)	p-value <sup>a</sup>
Gender	Male	<b>0.023</b>	3.17 (0.46)	<b>0.013</b>	3.20 (0.43)	<b>0.015</b>
	Female		3.34 (0.43)		3.38 (0.41)	
Age (years)	<60 years old	0.126	3.33 (0.47)	0.121	3.36 (0.45)	0.109
	≥60 years old		3.22 (0.43)		3.25 (0.41)	
Race	Malay	0.218	3.23 (0.41)	0.233	3.26 (0.40)	0.202
	Non-Malay		3.33 (0.52)		3.36 (0.48)	
Education level	Primary and below	<b>0.027</b>	3.15 (0.43)	<b>0.010</b>	3.18 (0.41)	<b>0.015</b>
	Secondary		3.32 (0.46)		3.34 (0.43)	
	Tertiary and above		3.43 (0.39)		3.49 (0.37)	
Marital status	Single	0.322	3.10 (0.19)	0.934	3.19 (0.21)	0.497
	Married		3.27 (0.46)		3.30 (0.44)	
Employment status	Employed	<b>0.043</b>	3.39 (0.44)	0.231	3.40 (0.43)	0.075
	Unemployed		3.22 (0.45)		3.26 (0.43)	
Monthly income	< MYR1000	0.095	3.23 (0.46)	0.193	3.26 (0.43)	0.818
	> MYR1000		3.36 (0.42)		3.29 (0.43)	

<sup>a</sup>t-test was used for less than 2 variables while the ANOVA test was used for more than 2 variables



Factors	Simple linear regression <sup>a</sup>				Multiple linear regression <sup>b</sup>			
	β	95% CI	t	p-value	β	95% CI	t	p-value
Constant	-	-	-	-	3.077	2.951, 3.203	48.349	<0.001
Gender	0.173	0.035, 0.310	2.480	0.014	0.183	0.049, 0.317	2.706	0.008
Education level	0.160	0.053, 0.267	2.958	0.004	0.167	0.062, 0.272	3.150	0.002

<sup>a</sup> Simple linear regression: normality and equal variance assumptions for all variables were met, independent random samples were used for the construction of data

<sup>b</sup> Multiple linear regression: R<sup>2</sup> = 0.102; The model fits fairly well, and model assumption were met; There was no multicollinearity problem. No significant interactions were found between factors.

The mean satisfaction score for each item was summarised in Table 4. Among the items the respondents rated, the lowest satisfaction was observed in question-related to medication issues management with the mean satisfaction score of 3.12 (SD=0.76). Most respondents also reported that pharmacists did not fully address health concerns and spent as much time needed with a mean satisfaction score of 3.18 (SD=0.67) and 3.20 (SD=0.58), respectively. Still, they have fully trusted all the pharmacists' information with a mean satisfaction score of 3.43 (SD=0.51).

## DISCUSSION

Overall, this study showed that patient satisfaction towards pharmaceutical care services provided by MTAC was high. This finding was consistent with other studies in patients with long term therapies for chronic diseases.<sup>18</sup> It was postulated that patients with lower expectations tend to be more satisfied. However, there were confounding variables that need to be considered, for example, personal beliefs and values about care.<sup>19</sup>

Pharmaceutical care service ratings concerning “quality of care” and “interpersonal relationship” are good predictors for patient satisfaction.<sup>10,14</sup> This study found that patient ratings on “interpersonal relationship” had the highest satisfaction score. Similar consistencies with high satisfaction score in “interpersonal relationship” was observed in Hassali and colleagues (2018). They reported that professionalism, communication skill and empathy showed to patient contribute to a good relationship between both parties, which improves patient satisfaction.<sup>14,20</sup> During the MTAC session, a pharmacist will brief patients about the disease and its complication, set a target for the desired disease control, review the management plan, provide counselling on medication use and proper technique of devices (for example, insulin pen, inhalers). In this study, most of the patients agreed that pharmacists made them comfortable during interactions due to the impression given as caring, kind, and respectful in dealing with their health issues. It provided further evidence that patients were generally putting their trust in pharmacists and believed in all the health information provided by them.

This study showed that female patients were more satisfied with pharmaceutical care services provided in MTAC. This result was in line with Bakar, Fahrni, and Khan (2016). One possible explanation is most of the female respondents in this study were unemployed. This might enable them to have more time available to discuss disease management with the pharmacists during MTAC sessions. Hence, they are more sensitive to their illness and make great use of pharmaceutical services to have their medical advice.<sup>3</sup> Besides, unemployed female patients have higher number

of visits than male patients, as shown in a study by Ismail and colleagues (2020). This has translated to the higher frequency of counselling and monitoring sessions for female patients, which in turn contributed to the greater satisfaction rating.<sup>21</sup> However, the contradictory result could be observed from some ambulatory care studies.<sup>12,22</sup> Women are deemed to be more selective; their expectations will be higher and cannot be met.<sup>12</sup>

In contrast to other studies, this study found that patients with tertiary and above education levels perceived significantly higher satisfaction than primary and below education levels.<sup>12,14,23</sup> Patients with higher education levels have more critical thinking and able to perceive and understand the whole counselling session in a better way.<sup>12</sup> On the contrary, those with lower education levels or illiteracy might not be aware of the knowledge and perception towards disease and medications, which will definitely influence their expectations of quality services.<sup>24</sup> A possible reason might be that the pharmacist unconsciously explains more in medical jargon to a low education level patient and assumes that the patient would understand better. Future research should explore this and the pharmacists' behaviour in addition to satisfaction ratings on pharmaceutical care services.

Survey items (N=148)	Mean (SD)
1. Pharmacist fully addressed my health concerns during my visit	3.18 (0.67)
2. Pharmacist was professional in all interaction	3.26 (0.57)
3. Pharmacist explained information that I can understand	3.33 (0.50)
4. Pharmacist checked if I understood	3.28 (0.62)
5. Pharmacist spent as much time needed with my concerns	3.20 (0.58)
6. Pharmacist made sure I understood following the drug regimen	3.37 (0.54)
7. Pharmacist provided useful recommendation on taking my med	3.38 (0.55)
8. Pharmacist made recommendations for my overall health	3.24 (0.63)
9. Pharmacist worked with me to manage my medication related issues	3.12 (0.76)
10. Pharmacist followed up on my progress in timely manner	3.29 (0.50)
11. Pharmacist was caring and kind during interaction	3.31 (0.52)
12. Pharmacist encouraged me to achieve treatment goals	3.29 (0.50)
13. Pharmacist made me comfortable during interactions	3.37 (0.50)
14. Pharmacist was respectful during interactions	3.38 (0.53)
15. Pharmacist was committed in improving my health	3.30 (0.56)
16. Pharmacist made me trust all the information provided	3.43 (0.51)

Meanwhile, no significant differences were denoted for age, race and marital status with patient satisfaction, which was consistent with previous studies.<sup>22,24</sup>

It was noteworthy that patient managed in pharmacist-led WMTAC showed better satisfaction in comparison to DMTAC and RMTAC; however, the difference was not significant. This could be explained by the consultation time spent during the WMTAC session is usually shorter than the other two MTAC because there is no device counselling involvement.<sup>25</sup> A study conducted in other Malaysia states by Raja Lexshimi and colleagues (2009) also reported that a longer consultation time causes patient dissatisfaction with hospital services.<sup>25</sup> In addition, physical facilities are essential factors that can influence patient satisfaction toward pharmaceutical services.<sup>22</sup> In line with this, it was indicated that most respondents have high expectations with a good setting before being served in the waiting area.<sup>26</sup> On the other side, patients were less convincing with the survey item "pharmacist spent as much time needed with my concerns" and "pharmacist fully addressed my health concerns", reflecting time constraint during MTAC session with the patient was not fully examined. It is inconsistent with the previous study, where indicated longer time spent on a patient may annoy and frustrate the patient.<sup>27</sup>

#### Limitations

This study had several limitations that should be taken into accounts while interpreting the results. Firstly, the data obtained in this study was from a single centre. Secondly, the majority of the patients were Malay and from the geriatric patient group. Thirdly, there was an unequal sample size between DMTAC, RMTAC and WMTAC. It might affect the generalizability of the results to all age group, other races and type of MTAC. Furthermore, this study was also limited by patients' typical perception of pharmacist service due to their beliefs and care value.

#### CONCLUSIONS

The current study showed that patients were satisfied with pharmaceutical care services provided by MTAC, regardless

of the types of MTAC involved. Patient satisfaction was higher in the interpersonal relationship domain than quality of care domain. Gender and education level were significant predictors for patient satisfaction. The study findings can serve as baseline data to design a better MTAC module to address the quality of care issues and meet patient satisfaction in other aspects. A multifaceted approach that addresses essential factors such as lay language and time spent for patients with a busy schedule are recommended to improve MTAC services in the future.

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#### CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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