

## Good Medication Adherence and its Association with Meaning in Life among Thai Individuals with Schizophrenia

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### Abstract:

**Objective:** To study medication adherence, meaning in life, the association of medication adherence and meaning in life among Thai individuals with schizophrenia.

**Material and Methods:** This cross-sectional study surveyed all outpatient individuals with schizophrenia that followed up at the Psychiatric outpatient clinic, Songklanagarind Hospital. Three questionnaires were used: 1) Demographic information 2) Medication adherence questionnaire and 3) The meaning in life questionnaire. Descriptive statistics were calculated using proportions, median and inter-quartile range (IQR) or mean and standard deviation (S.D.).

**Results:** According to the study period; from December 2020 to March 2021, there were 110 respondents. Most of the respondents (94.5%) attended regular follow-ups, via doctor's appointments. The majority of them were male (56.4%), single (76.4%), and Buddhist (82.7%). The mean age was  $42.3 \pm 11.8$  years. According to the medication adherence questionnaire, all participants (100%) had good medication adherence scores. Concerning meaning in life, most of the participants had high scores in all subparts of meaning in life; the presence of meaning in life and looking for something that made their lives feel purposeful and meaningful. There was no relationship between meaning in life scores and demographic characteristics ( $p\text{-value} > 0.050$ ). As all participants (100%) had good medication adherence scores, the association between medication adherence and meaning in life could not be established in this study.

**Conclusion:** Most individuals with schizophrenia had good medication adherence as well as meaning in life. The search for meaning in life and meaning in taking medications may decrease negative medication attitudes and change the meaning of the illness.

**Keywords:** adherence, meaning in life, medication, patient, schizophrenia

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## Introduction

Schizophrenia is a long-term, chronic mental illness.<sup>1</sup> It is a disease that has residual symptoms and functional impairment. Therefore, both biological management and psychiatric rehabilitation for individuals with schizophrenia are essential to improve and recover the patient's quality of life and to lessen the burden for family members.<sup>2</sup> The core concept of schizophrenia management is the combination of medication, ensuring patients gain insight, and the coaching of necessary community-living skills; such as, integrating patients back into society; via employment or an occupation can reduce or relieve stigma. Although, some individuals with schizophrenia gain insight well, the reality of this illness causes them to suffer from stigmatization, and because of this, patients usually deny or refuse medication; which in turn makes them relapse.<sup>3</sup>

Nowadays, antipsychotic medications play an effective role in schizophrenia symptom control; however, medication adherence for individuals with schizophrenia requires continuous long-term treatment to control symptoms, prevent relapse and avoid consequences.<sup>1</sup> The major problem in the management of individuals with schizophrenia is non-adherence.<sup>4</sup> The prevalence of non-adherence among schizophrenia was 28.8%. Concerning medication non-adherence, patients are divided into two groups: intentional non-adherence; including those who deny medication, and unintentional non-adherence; including those with cognitive impairment.<sup>5</sup> Intentional non-adherence is related to impaired insight, whilst unintentional non-adherence is derived from neurocognitive deficiency<sup>6,7</sup> that affects the defective executive performance, or forgetting about their medication.<sup>8</sup> Identified risk factors for non-adherence among individuals with schizophrenia included: impaired insight, stigmatization, cognitive deficiency, drug or alcohol abuse, medication attitudes or beliefs, negative subjective response to treatment<sup>5,9</sup>, and regarding the disorder as a minor or perceived mild utility from treatment.<sup>1,3</sup>

Due to having a chronic mental illness, some individuals with schizophrenia lose meaning in life. The presence of meaning in life is expected as: self-appraisal, personal growth, and altruistic with spiritual behaviors. It is positively related to intrinsic religiosity, agreeableness, extraversion, and well-being; whilst, it is negatively related to depression and anxiety. Whilst searching for meaning in life is hedonic behavior, which positively relates to rumination, religious quests; past-negative and present fatalistic time perspectives negatively affect both neuroticism and depression. In addition, it is negatively related to future time perspectives, close-mindedness (dogmatism), and well-being.<sup>10,11</sup> Hence, over the course of this chronic mental illness, the presence of meaning in life is a significant issue for promoting a patient's good medication adherence, and well-being or graceful mental health.

In Thailand, the Department of Psychiatry, Faculty of Medicine, Prince of Songkla University, applies the: "narrative" and "homestay" models for psychiatric rehabilitation intervention. The narrative model is employed to search for meaning in life, and to modify the meaning of the illness for taking medication. In addition, the homestay model has been used for de-stigmatization.<sup>12</sup> Individuals with schizophrenia then have treatment behavior changes, not only medication adherence, but also self-esteem or core concepts of self.<sup>13</sup> These are due to individuals with schizophrenia having a new perspective of the illness, and accepting medication as necessary for life with this disease. In addition, the return to society or stigmatization is not a problem anymore. They may feel less shy and remake themselves as valuable people; for example: a volunteer that helps people in the community. In summary, the burden of family and oneself seems to decrease, while social function would be increased.<sup>14</sup> Thus, this study purposed to study the medication adherence and meaning in life among individuals with schizophrenia. The relationships of good or poor medication adherence and meaning in life

among individuals with schizophrenia were also identified. Additionally, the definition of good medication adherence in this study means that from the prescribed medication, the patient followed a prescribed schedule, neither took lower nor higher doses, did not completely abandon medication<sup>6</sup>, nor reject attending ordinary visits or being admitted into the hospital.<sup>15,16</sup> Meaning in life was divided into 2 types: the presence of meaning in life and the search for meaning in life.<sup>10,11,17</sup>

## Material and Methods

The Ethics Committee of the Faculty of Medicine, Prince of Songkla University approved this cross-sectional study (REC. 63-202-3-1). Participants with schizophrenia, who visited the psychiatric outpatient clinic, were invited into this study by a psychiatric nurse. Informed consent from the participants was obtained before collaboration. They could agree or disagree to participate in the study, and could leave the study at any time.

A cross-sectional study surveyed all outpatient individuals with schizophrenia that followed up at the Psychiatric outpatient clinic, Songklanagarind Hospital; from December 2020 to March 2021. Inclusion criteria were individuals with schizophrenia who were diagnosed by psychiatrists for more than one year: based on the International Classification of Diseases 10<sup>th</sup> code F20.0–F20.9, and were retrieved from the medical register, had been screened for mental capacity (judged by an outpatient psychiatric nurse), and were willing to complete all parts of the questionnaires. Exclusion criteria were individuals with schizophrenia who were unable or lacked the mental capacity to complete all the questionnaires, or felt it was inconvenient for them to collaborate and wanted to stop participating.

The participants were approached by a researcher and were invited to collaborate, by introducing the overview of the information and given the rationale contained in the research. In cases of those who cooperated, the

researcher distributed self-reporting questionnaires; these were explained to the participants in detail. Additionally, participants were permitted to take a few minutes to deliberate whether or not to join the survey. To assure the participants' identities would be protected signatures of participants were not desired. Furthermore, we informed them that their data would remain anonymous, and highlighted that they could withdraw at any stage of the questionnaire without giving any reasons; additionally, this act would not affect their regular treatment. All participants were permitted to finish and return the questionnaires promptly or at a later time. They could either submit the questionnaires at the front of the clinic or return and leave them at the Psychiatry Department at a later time; therefore, protecting respondent confidentiality was retained.

We tried to calculate the sample size by the G\*Power program. We estimated Cohen's effect size at medium (0.3), because there has been no research on the association of the meaning in life and medication adherence in the past, and used Alpha=0.05, and Power=0.8. However, from the number of patients in the past, there were only 30 outpatient individuals with schizophrenia per month: all of these were collected for this study.

## Measures

1. Personal and general demographic information comprised of gender, age, religion, income, working information, marriage status, hometown, caffeine or alcohol consumption, substance usage, and underlying diseases.

2. The Medication adherence scale in Thai (MAST) uses 8 items, rated on a 0–5 scale, with the total scores ranging from 0–40. The cut-off point of MAST is 34. A score of less than 34 indicates that the participant had good medication adherence. The specificity and sensitivity were 89.7%, and 85.8%, respectively. The positive and negative predictive values were 90.6% and 84.7%, respectively. The Cronbach's alpha coefficient of MAST was 0.828.<sup>15,16</sup>

3. The meaning in life questionnaire (MLQ) uses 10 items, rated on a 5-point scale from: “absolutely true” to “absolutely untrue”, with total scores ranging from 10 to 50. MLQ has 2 subscales: the presence of meaning in life and the search for meaning in life. The presence of meaning subscale measured how fully respondents feel their lives are of meaning; whereas, the search for meaning subscale measured how motivated and engaged respondents are in efforts to find meaning or deepen their understanding of meaning in their lives.<sup>17,18</sup> The higher the score indicates that the participant had more meaning in life. The Cronbach’s alpha coefficient of the presence of meaning subscale and search of meaning subscale were 0.73 and 0.78, respectively.<sup>18</sup>

All analysis was performed using R version 3.2.1. A level of significance of 0.05 was used in this study. The Shapiro–Wilk test was used to test the normality distribution. Descriptive statistics were calculated using proportions, mean and standard deviation (S.D.), or median and inter-quartile range (IQR). The relationship between meaning in life scores and all variables were tested by using the Kruskal–Wallis test (for more than 2 groups of independent variables), and Rank–sum test (for 2 groups of independent variables) when the data were non-normal, and using Student’s t-test (for 2 groups of independent variables) if the data were normal.

## Results

According to the study period, December 2020 to March 2021, there were 112 individuals with schizophrenia who had set follow-up appointments at the Psychiatric outpatient clinic; only 2 individuals with schizophrenia did not attend follow up at their set appointment date. This was because they received their medicine via the postal system. Hence, there were 110 respondents (94.5%) who

attended regular follow-ups by doctor appointments and participated in this study. The majority of them were male (56.4%), single (76.4%), and Buddhist (82.7%). (Table 1) The mean age was 42.3±11.8 years, and the median income (IQR) was 11,000 (5,000–20,000) Baht per month. Of all participants, only 14 (12.7%) and 22 (20.0%) participants had a history of alcohol consumption and substance usage within one month. The most common substance that the participants used was cigarettes (17.3%). Additionally, some participants (24.5%) had a physical illness; such as, hypercholesterolemia (30.0%), diabetes (22.2%), or hypertension (18.5%).

Using the medication adherence questionnaire, all respondents (100%) had a MAST score of less than 34; meaning they had good medication adherence (Table 1).

**Table 1** Demographic characteristics and medication adherence (n=110)

Demographic characteristics	Number (%)
Gender	
Male	62 (56.4)
Female	48 (43.6)
Religion	
Buddhism	91 (82.7)
Islam/Christianity	19 (17.3)
Marital status	
Single	84 (76.4)
Married	20 (18.2)
Divorced	6 (5.5)
Education	
Primary school and below	10 (9.1)
Secondary school and above	100 (90.9)
Home town	
Songkhla province	65 (59.1)
Other	45 (40.9)
Occupation	
Government employee officer/State enterprise officer/Private company employee	19 (17.2)
Merchant/Personal business/Employee/Agriculture	38 (34.5)
Student	3 (2.7)
Unemployed	50 (45.5)

**Table 1** (continued)

Demographic characteristics	Number (%)
History of alcohol consumption (within 1 month)	
Yes	14 (12.7)
No	96 (87.3)
History of substance use (within 1 month)	
Yes	22 (20.0)
No	88 (80.0)
Physical illness	
No	83 (75.5)
Yes	27 (24.5)
Follow-up	
Come on appointment	104 (94.5)
Before appointment	5 (4.5)
Come after appointment	1 (0.9)
Medication Adherence scale*	
Good	110 (100.0)
Poor	0 (0.0)

\*Good medication adherence (score<34) and poor medication adherence (score≥34)

**Table 2** Meaning in life

Subscale	Median	IQR
Presence of meaning in life		
I understand my life's meaning.	5.0	4.0–5.0
My life has a clear sense of purpose.	5.0	3.0–5.0
I have a good sense of what makes my life meaningful.	5.0	4.0–5.0
I have discovered a satisfying life purpose.	5.0	4.0–5.0
My life has no clear purpose.	1.0	1.0–4.0
Search for meaning in life		
I am looking for something that makes my life feel meaningful.	5.0	3.0–5.0
I am always looking to find my life's purpose.	5.0	4.0–5.0
I am always searching for something that makes my life feel significant.	4.5	3.0–5.0
I am seeking a purpose or mission for my life.	4.0	3.0–5.0
I am searching for meaning in my life.	5.0	3.0–5.0

IQR=interquartile range

**Table 3** Meaning in life scores categorized by demographic characteristics

Demographic characteristics	Median (IQR)	Rank sum test p-value
Gender		0.023
Male	40.5 (36.0–46.0)	
Female	38.0 (31.5–42.2)	
Religion		0.333
Buddhism	39.0 (34.0–44.0)	
Islam/Christianity	42.0 (34.0–46.0)	
Marital status		0.578
Single/divorce	38.5 (34.0–44.0)	
Married	42.0 (32.8–46.0)	
Education		0.07 <sup>a</sup>
≤Secondary school	40.0 (34.5–46.0)	
Diploma	39.0 (36.5–42.5)	
Bachelor's degree and above	38.0 (30.0–42.0)	
History of alcohol consumption		0.854
Yes	40.5 (34.0–45.5)	
No	39.0 (34.0–44.0)	
History of substance use	mean±S.D.	0.106 <sup>b</sup>
Yes	40.7±5.5	
No	38.1±7.2	
Physical illness		0.712
No	38.0 (34.0–44.5)	
Yes	40.0 (35.0–44.0)	

<sup>a</sup>p-value from Kruskal-Wallis test, <sup>b</sup>p-value from t-test, IQR=interquartile range

According to the meaning in life questionnaire, there were two subscales: the presence of meaning in life, and the search for meaning in life. Most of the respondents had a high score in all subparts of meaning in life. Moreover, all participants had the presence of meaning in life, and were looking for something that made their lives feel purposeful and meaningful (Table 2). There was no relationship between meaning in life scores and demographic characteristics ( $p$ -value>0.050) (Table 3).

#### **Association between medical adherence and meaning in life**

As a result, the relationship between poor or good medication adherence and meaning in life could not be identified in this study.

## **Discussion**

This study found that most participants (94.5%) attended regular appointments to visit their doctor, and all of them (100%) had good medication adherence. According to the meaning in life, all participants had the presence of meaning in life, and were searching for a meaning in life that gave their lives meaning and purpose. There was no relationship between meaning in life scores and demographic characteristics. Comparing medication adherence from our study with that reported by a previous study this was higher than the other study, which found 71.2% had adherence and 28.8% had non-adherence over 3 years. Additionally, a prior systematic review study found that 74.0% of patients had discontinued treatment within 18 months.<sup>19</sup> These differences might be due to the use of differences in study instruments, study design, ethnicity, and background of the population. Regarding the previous data, factors positively associated with medication adherence were the perception of benefits in medication, and a good therapeutic relationship with the practitioners.<sup>1</sup> Based on this study's results, most of the participants came to visit or follow up at set appointments, and took their medication

regularly. Hence, other explanations of this study's results might point to the feature of the population as having a good therapeutic relationship with their practitioners, nurses, and the psychosocial intervention team or having good insight. Therefore, there was no gender differences in attitudes towards antipsychotic medications in our individuals with schizophrenia. Moreover, the prior study identified not only gender difference, but the different psychosocial and clinical factors that might account for the negative attitude towards antipsychotic treatment in male and female patients.<sup>20</sup>

Additionally, as the prior systematic review and meta-analysis concluded, successful interventions of medication adherence used a combination of educational and behavioral strategies. The combined use of educational sessions focusing on diagnosis, symptoms, medication, and relapse, with medication reminders at patients' homes and an intensive training program provided on a one-to-one basis by skilled nurses that could improve medication adherence. Furthermore, such mixed interventions were deemed feasible to implement in daily practice.<sup>21</sup>

However, as the prior study found, the key drivers of worse medication adherence included: having poor or no insight, substance abuse, and medication beliefs.<sup>1</sup> In addition, alcohol dependence, substance use, a negative medication attitude, and stigmatization are important impact factors of poor medication adherence.<sup>5,9</sup> From this study, there were only 12.7% and 20.0% of participants who had a history of alcohol consumption and substance usage (cigarettes) within one month. Therefore, most of the population from this study had lower comorbidity disorders, than the prior study; making for more positive outcomes. However, many schizophrenia factors were found as having a directional relationship with worse adherence; such as, a lack of insight into their illness, meaning that they were not aware of the symptoms and consequences of their disease or illness.<sup>6,22,23</sup> Therefore, future studies should search for an association between medication adherence and insight.

In addition, except for the relationship with the physician having evidence suggesting a therapeutic relationship with monitoring and introduction to medication intake or being contributors to appropriate adherence,<sup>24</sup> other external or environment-associated factors included: the stigma of the illness, living situations, and caretaker support as also being important. Other environmental factors that affect medication adherence positively also include family or social support<sup>25</sup> and greater social activities.<sup>5</sup> In contrast, the stigma of taking medication and having poor or no social support were found to negatively influence medication adherence.<sup>25</sup> The prior study, from the Department of Psychiatry, Faculty of Medicine, Prince of Songkla University, identified that these individuals with schizophrenia had a moderate quality of life<sup>26</sup>, and most patients and caregivers perceived a low level of stigma.<sup>13</sup> Moreover, most of the caregivers had no severe caregiver burden, with most burdens being at a mild level (22.0%). The related, significant factors associated with family or caregiver burden were relapse of patient symptoms, unpleasant events in patient caring, and caregiver's physical illness.<sup>14</sup> As mentioned previously, low burden and low stigma might have influenced this study outcome of medication adherence positivity.

Regarding the meaning in life, this study identified all participants had the presence of meaning in life, and the search for the meaning in life that made their lives feel meaningful and purposeful. That might be due to the influence of using the narrative model to help patients to change the meaning of the illness, and search for meaning in life; meaning in taking medications that decrease negative medication attitudes. Thus, all individuals with schizophrenia in our psychiatric department may have individual meaning for their lives. If someone feels their life is of meaning, it will either motivate or encourage that person to find deepen meaning, understanding, and acceptance for the entirety

of their lives.<sup>17,18</sup> Therefore, individuals with schizophrenia do not feel pain or suffering. In contrast, it enables them to recognize and accept it as part of life.

This survey was a cross-sectional study and used self-reporting for individual perception assessment. Beyond its high response rate, the information might not have led to bias. However, as medication adherence was measured only once, and used only one assessment tool; the results might have led to bias. Additionally, the population was limited to only individuals with schizophrenia who came to the hospital for regular appointments, and it did not cover individuals with schizophrenia who did not follow up according to appointments. Furthermore, the population was limited to only individuals with schizophrenia from the Psychiatric outpatient clinic, of Songklanagarind Hospital; therefore, it is too soon to generalize this information to a nationwide setting. Additionally, a small sample size could have influenced the results, perhaps future studies with larger sample sizes could be more representative.

Further surveys should investigate more individuals with schizophrenia within Thailand. Therefore, a multicenter survey is recommended. In addition, individuals with schizophrenia who are lost to follow-up, or have poor medication adherence should also be of concern. Moreover, further studies should employ a more quantitative method or contain a control group.

## Conclusion

Most individuals with schizophrenia had good medication adherence as well as meaning in life. The search for meaning in life and meaning in taking medications may decrease negative medication attitudes, and change the meaning of the illness. Therefore, schizophrenia does not cause them pain or suffering, and it enables them to accept it as part of life.



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## Conflict of interest

No conflicts of interests are declared.

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