

Do Religiosity and Socio-demographic Factors Affect Adherence of Cancer Patients to Analgesics? An Egyptian Study

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Abstract

Background: Adherence of cancer patients to analgesics has not been adequately addressed although nearly half of them in early stages and up to 80 % in later stages may suffer from pain. **Aim:** to assess the adherence of cancer patients to analgesics as well as the effect of religiosity and some selected socio-demographic factors among cancer patients on coping with pain. **Methods:** A cross-sectional study was conducted on 92 cancer patients attending pain clinics of Mansoura University Hospital and Oncology Center, Egypt. An interview questionnaire was used as a data collection tool. Adherence and religious commitment rates were assessed using the 8-item Morisky Medication Adherence Scale and 10-item Religious Commitment Inventory. **Results:** The overall rates of analgesic adherence and religiosity among cancer patients were 67.4% and 64.1% respectively. Logistic regression analysis revealed that the most independent significant predictors of adherence to analgesics were high religious commitment (OR = 29.7), age \leq 47 years (OR = 24.2), marriage (OR = 23.4), and cancer with metastasis (OR = 6.5). **Conclusions:** The study indicates significant factors relating to analgesic adherence, the religiosity was the dominating one and could be helpful to improve adherence among cancer patients particularly in countries with strong religious believes including Egypt. Additional studies to improve adherence to pain medications among those desperate group of patients are needed.

Keywords: *Cancer patients; Pain clinics; Analgesic adherence; Religiosity; Socio-demographic characteristics.*

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Introduction

The International Society for Pharmacoeconomics and Outcome Research recently defined adherence as synonymous with compliance, that is, “the degree or extent of conformity to the recommendations about day to day treatment by the provider with respect to the timing, dosage, and frequency.”¹ In 2013, the WHO defined patients’ adherence as “the extent to which a person’s behavior, taking medication, following a diet, and/or executing

lifestyle changes, corresponds with agreed recommendations from a health care provider.”²

The maximum adherence rates to long-standing treatments are merely 50% or even lower in average.³ Non adherence to medications was confirmed as a problem among patients with chronic diseases in the Middle Eastern countries via reviewing of 19 relevant studies addressing the non adherence to medication across different conditions,

including hypertension, chronic obstructive pulmonary disease, asthma, diabetes, depression, schizophrenia and epilepsy where the estimated rates of non adherence to medication ranged from 1.4% to 88%.⁴ Previous Egyptian study was noted that only 38.9% of all patients with Type-2 DM showed good adherence to drug, while 45% were poorly adherent and nearly 16% were non adherent.⁵

The assessment of medication adherence in patients is crucial as non-conformity with prescribed drug regimen poses a substantial risk for therapeutic failure, regardless of the underlying disease.⁶ Various adherence assessment methods have been used including, both direct and indirect methods. Among these indirect assessment tools, self report is the most common. Questionnaires, interview, and diaries are examples. For research purposes, self-report is superior by the economical, easy rapid documentation and gathering of data, also can give insight into patients' barriers to medication intake. However, it is limited by patient memory.⁷

Adherence of cancer patients to analgesics has not been adequately addressed although nearly half of patients in early stages and up to 80 % of them in later stages may suffer from pain.^{8, 9} Cancers patients are often treated with a blend of different opioids and adjuvants. Lack of adherence to pain medications is considered one of the contributing causes for inadequate pain management.¹⁰

Fortunately, many patients frequently in form that religiosity is a strong source of spirit, comfort, and hope, especially in managing a medical disorder. This is mainly important for patients suffering from diseases that are described to be chronic, widely disabling, or with bad prognosis. In addition, religion has been documented as an important factor that heavily influences person decision behavior.¹¹ Religion may affect medical

decision-making, induce spiritual struggles that create stress and impair health outcomes, and interfere with disease detection and treatment adherence.¹² Studies examining the effect or impact of religion on behavior are based on two facets; religious affiliation and religiosity. Religiosity, or religious commitment, is defined as the degree to which a person adheres to his or her religious values, beliefs and practices and uses them in daily life.¹³ A number of researchers believe that religious affiliation is not sufficient to reflect the impact of religion on behavior. In addition, it is recommended that future research in the area of religion and behavior should focus on religious commitment¹⁴, as religious commitment open the way for more hope, sanguinity, spirit and motivation in life. Patients with active religious practices are more prone to have a purpose for living and better improvement. On the contrary, depression and lack of hope may predispose to non adherence with the treatment guideline.¹⁵

Up to the end of our knowledge, no available Egyptian studies addressed adherence of cancer patients to analgesics and the effect of religiosity and some selected socio-demographic on it, so this study was conducted at pain clinics to clarify these issues.

Methods

Study Design: A cross-sectional study was conducted during September 2016 at the outpatient pain clinics of Mansoura University Hospital (MUH) and Oncology Center (OCMU), Mansoura, Egypt. Pain clinics are run 5 days a week. Mansoura University pain clinics serve many patients coming from different Egyptian areas. Data were acquired through a structured questionnaire filled by an interviewer.

Study Participants and Sample Size

Calculation: By using Epicalc 2000 version 1.02 for sample size calculation at 95% CI, 0.05 margin of error, and 80% study power, assuming 65% adherence rate from a previous study¹⁷ and null hypothesis value 50%; the estimated sample size needed for the study was to be at least 84. To overcome the drop out of cases, we need to add 10% of the estimated sample size; thus the final subjects in our study consisted of 92 patients. This study sample was recruited consequently from out-patient's pain clinics at MUH and OCMU until sample size was satisfied.

Eligible patients have to meet the following inclusion criteria: had a cancer diagnosis; had an average pain intensity score of >3 on a 0-10 scale in the past 24 hours; had been prescribed analgesics regimen for the duration of the study, were conscious and able to communicate well, and had age between 18-75 years. Participation was based on voluntary base.

The researchers introduced themselves to the participants, who were informed about aims of study, guarantees of anonymity and confidentiality and they signed a written consent. The study was approved by the Institutional Research Board (IRB) of Faculty of Medicine, Mansoura University. Participants were asked to respond to assessment scales: medication adherence and religiosity in addition to socio-demographic questionnaire.

Study Instrument: The instrument used in the present study was composed of 3 parts: Part 1 elicited some selected socio-demographic data. Part 2 was a medication adherence scale (MMAS-8). Part 3 was a schedule for the Religious Commitment scale (RCI-10).

The Arabic version of the validated 8-item Morisky Medication Adherence Scale (MMAS-8) was used.¹⁶ It enquires

about a patient's experiences with medications during the 2 weeks prior to answering the questionnaire. The scale is a widely used and validated tool to assess patient adherence/non-adherence to drug regimen in different settings. The scale consists of 8 questions; the first 7 questions are dichotomous (yes/no). All the questions except item 5 are reverse-coded (no, 1; yes, 0). Question 8 has a 5-item Likert scale scored in a negative direction from 1 (never) to 5 (always), and is further divided by 4 when calculating a summated score. A range of 0-8 is for the total scale.^{17, 18} The outcome of MMAS-8 score was dichotomized into adherent (6-8) and non-adherent (0-5) based on the median value which was 5.¹⁶

The English version of 10-item Religious Commitment Inventory (RCI-10) is a validated tool that is recommended for counseling as one of several instruments needed for general religious assessment regardless the religious affiliation. It is based on supposition that a highly religious person will evaluate the world through religious schemas and thus will integrate his or her religion into much of his or her life. Clinically, it could assess religious commitment in short time while maintaining excellent psychometric support. The full scale consists of 10 items answered on a 5-point Likert scale. It includes 2 subscales: items 1, 3, 4, 5, 7, and 8 make up the Intrapersonal Religious Commitment subscale (cognition); items 2, 6, 9, and 10 make up the Interpersonal Religious Commitment subscale (behavior). Each item is rated as 1= not at all true of me, 2= somewhat true of me, 3= moderately true of me, 4= mostly true of me, or 5 = totally true of me. A full-scale score of ≥ 38 would consider a person to be highly religious.¹³ The English version of RCI-10 was translated into Arabic. The Arabic translation of RCI-10 was based

on forward and backward translation by bilingual Egyptian researchers with comparison between the original English version and the back translation version to insure obtaining of similar translation. Then the Arabic version of the RCI-10 was piloted on a group of 10 persons who were not included in the final analysis in order to check the clarity, comprehension and ease of running in addition to improve the quality of the translated final version of the tool. Only some minor changes were applied after the pilot testing. Then, test-retest reliability with two weeks apart of the final Arabic version of RCI-10 was done among a convenient group of 50 persons. The reliability statistics for the translated RCI-10 and the interclass correlation for the test-retest statistic were accepted (Cronbach's alpha = 0.75 and 0.81). Data collection was facilitated via well trained interviewers whose task was to manage the questionnaire.

Data management:

The collected data coded, processed and analyzed using SPSS program (version 16) for windows. Descriptive statistics were presented as numbers, percentage, median, minimum, and maximum as appropriate. Chi-squared and Fisher's Exact tests were used for comparison between groups. The dependent variable was the analgesic adherence and all other variables including religious commitment were independent. Odds ratios (OR) and 95% confidence intervals (CI) were calculated. Significant factors on univariate analysis were entered into multivariate logistic regressions analysis using the forward Wald method to find the independent predictors of analgesic adherence. Hosmer and Lemeshow test was applied to insure stability of the regression model. The adjusted OR and the 95% CI were calculated. A *p-value* at ≤ 0.05 was considered significant.

Results

Patients' demographic characteristics sketch that more than half of the patients were females (53.3%) and less than 47 years (62%) with age ranged from 23-74 years. All our patients were affiliated to Muslims, most of them were residing rural areas (73.9%), married (78.3%), 81.5% had education at or below the high school, and 83.7% were unemployed with 98.9% had insured analgesics cost coverage. Although more than half of our patients (51.1%) were diagnosed metastatic cancer and 62% prescribed strong opioids, most of them (76.1%) expressed adequate response to analgesics (Data are not displayed in table).

Prevalence of analgesic adherence showed that more than two third of the studied patients were adherent with 67.4% overall adherence rate while the prevalence of religiosity among cancer patients showed that nearly 64% expressed high religious commitment (Data are not displayed in table).

Table (1) shows that highly religious cancer patients were significantly more likely to be analgesics adherent than those who were not highly religious (89.5% Vs. 31.4%). The rate of adherence was significantly higher among those with age ≤ 47 years, females, married, with education \leq high school and patients diagnosed with metastatic cancer (91.2%, 87.8%, 77.8%, 73.3%, and 93.6% respectively).

Logistic regression analysis in **Table (2)** revealed that the most independent significant predictors of patients' adherence to analgesic were: religious commitment, self-paid (OR = 29.7), younger age ≤ 47 years, (OR = 24.2), marriage (OR = 23.4), and cancer diagnosis with metastasis (OR = 6.5). Nevertheless, gender and education were retained in the multivariate analysis as

Table (1): Patients' religiosity and socio-demographic characteristics affecting analgesics adherence

Predictor	Total N	Adherent N (%)	p-value*	OR (95%CI)
Overall (Adherence)	92	62 (67.4)		
<u>Religious commitment</u>				
- Not highly religious	33	13 (31.4)	≤ 0.000	1(r)
- Highly religious	59	49 (89.5)		7.5 (2.6–22.7)
<u>Age</u>				
- > 47 years	35	10 (28.6)	≤ 0.000	1(r)
- ≤ 47 years	57	52 (91.2)		26.0 (7.1–102.4)
<u>Gender:</u>				
- Male:	43	19 (44.2)	≤ 0.000	1(r)
- Female	49	43 (87.8)		9.1 (2.9–29.7)
<u>Residence:</u>				
- Urban	24	17 (70.8)	0.68	1(r)
- Rural	68	45 (66.2)		0.8 (0.3–2.5)
<u>Marital status:</u>				
- Unmarried	20	6 (30.0)	≤ 0.000	1(r)
- Married	72	56 (77.8)		8.2 (2.4–28.9)
<u>Education:</u>				
- > High school	17	7 (41.2)	0.01	1(r)
- ≤ High school	75	55 (73.3)		3.9 (1.2–13.5)
<u>Employment:</u>				
- Employed	15	11 (73.3)	0.77	1(r)
- Unemployed	77	51 (66.2)		0.7 (0.2–2.8)
<u>Analgesics cost coverage:</u>				
- Self-paid	1	0	0.33	-----
- Insured	91	62 (68.1)		
<u>Cancer diagnosis:</u>				
- Non-metastatic	45	18 (40.0)	≤ 0.000	1(r)
- Metastatic	47	44 (93.6)		22.0 (5.4–104.9)
<u>Analgesics type:</u>				
- Non opioid	12	9 (75.0)	0.74	1(r)
- Opioid	80	53 (66.3)		0.65 (0.13–2.97)
<u>Response to analgesics:</u>				
- Inadequate response	22	14 (63.6)	0.67	1(r)
- Adequate response	70	48 (68.6)		1.3 (0.4–3.8)

OR: Odds ratio; CI: confidence interval; r: reference group. *Significant level: $p\text{-value} \leq 0.05$ confounders of independent predictors of adherence ($p = 0.15$ and 0.18 respectively).

Discussion

Managing chronic pain has become more focused as cancer patients live longer, and is increasingly held in the outpatient clinics.¹⁹ Analgesics remain the predominant paradigm of cancer pain

management, and the majority of the patients with moderate-to-severe cancer pain are treated with opioids.²⁰ The present study revealed an overall adherence rate of 67.4% in a sample of cancer patients undergoing analgesics

therapy at pain clinics. The present result was in accordance with the 65% overall adherence rate to pain guideline criteria among adult patients with malignant

disease that was identified at two hospitals for palliative care in Scotland, UK.²¹

Table (2): Logistic regression analysis of significant independent predictors of analgesics adherence^a

Predictor	β	p-value*	OR (95% CI)
Religious commitment: - Not highly religious - Highly religious	— 3.4	0.003	1(r) 29.7 (3.1–281.2)
Age - > 47 years - ≤ 47 years	— 3.2	0.01	1(r) 24.2 (2.6–227.9)
Marital status: - Unmarried - Married	— 3.2	0.01	1(r) 23.4 (1.9–289.2)
Cancer diagnosis: - Non-metastatic - Metastatic	— 1.9	0.04	1(r) 6.5 (1.1–39.1)
Constant Model χ^2 Percent correctly predicted	-6.8 8.73 <i>p-value</i> = 0.003 93.5		
Hosmer and Lemeshow Test: χ^2 df <i>p-value</i>	13.688 8 0.090		
OR: odds ratio CI: confidence interval r: reference group *Significant level: <i>p-value</i> ≤ 0.05			

In comparison, the present rate was higher than the overall analgesic adherence rates of African American²² and Netherlands studies¹⁰, while it was lower than that of Caucasian cancer patients.²³ However, it was reported that medication adherence rates amongst patients who have prescribed analgesics for their cancer pain are lower than what is needed to achieve optimal pain control.²⁴

A cancer diagnosis is one of the most difficult ones for any person to receive and cope with. Many individuals rely on religion or their spiritual beliefs to find meaning through the process of coping

with such a serious illness.²⁵ The current study found more than two third (64.1%) of the studied cancer patients significantly expressed high religious commitment. This could be explained by the fact that once a life threatening disease is diagnosed, religious commitment seems to become especially important in a patient who gets comfort from religious activities. Also facing death can make patient searches for meaning in life, and think more religiously. Furthermore, all patients were affiliated to Islam and most of Muslims have strong believes that Allah, Quran, pray, and supplication

can cure or even help them to deal with cancer.

The current study revealed that the most powerful significant independent predictors of analgesic adherence among cancer patients were the high religiosity followed by younger age, married and cancer with metastasis, while educational level and gender were confounders. These findings were not in agreement with other study conducted in oncology clinics of a large referral cancer hospital in Norway, where higher adherence was associated with male sex, lower self-efficacy for physical function scores, higher average pain intensity scores, higher pain relief scores, and the use of strong opioids analgesics.²⁶ Another study compared analgesic adherence between African American and Whites cancer patients found that predictors of adherence varied by race, income levels, analgesic side effects and fear of distracting providers.²⁷ However a systematic review conducted to address different predictors of therapeutic compliance in general reported that educational level and gender may not be a good predictor.²⁸

Our patient with high religious commitment were more likely to be adherent to analgesics than other by 30 fold. This may be attributed to the hope that religion could offer to those who suffering from cancer. Another explanation was reported that Islamic healing is practiced throughout the world including non-Muslim countries.²⁹ For cancer patients, they seek spiritual healers to receive special prayers or blessings for their treatment, so it will likely continue to be popular complementary approach in cancer management.³⁰ This finding was supported by research that showed cancer patients who rely on religious beliefs to cope with their illness are more likely to accept illness and to deal with it in a

positive manner.³¹ Previous studies found that organizational religious activity had significant positive association with adherence to medications. One explanation may be that religious activity lowers depression, as depression may reduce patients' adherence to medication.³²

In this study younger age was the 2nd significant predictors of analgesic adherence among cancer patients where those ≤ 47 years were more likely to be adherent than older by 24 fold. This finding could be explained by the fact that with young age, there is more hope to stay alive and fight the disease to survive as many patients may believe that analgesics are curative treatment for cancer. Also, younger's adherence to analgesics may be more motivated than older by family responsibilities and work demands. In addition, older patients could fail to stick on medications due to memory deterioration and decision-making deficit. In comparison to our result, a systematic review on compliance to therapy reported that middle-aged patients were less likely to be compliant.²⁸

The present work, found that marital status was the 3rd significant predictors of analgesic adherence where married patients were more likely to be adherent than non married by 23 folds which could be explained by the fact that most of the studied patients were married (78%), also the presence of family responsibilities could push patients to be more adherent to analgesics. This was in agreement with other study that found marital status might positively control patients' adherence to medication due to help and support from a spouse.^{28, 33} However, our study was disagreeing with others that reported marital status as not to be related to medications adherence.³⁴⁻³⁸ This inconsistency could be explained by difference in disease conditions with

the burden being masked by the disease factor.

The present survey, showed metastasis as a last predictor of analgesic adherence which was increased by 6.5 folds over patients without metastasis. Severe pain, fear and desire to die in peace that often associate cancer with metastasis could explain our result. Also Grant et al reported that patients who had marked improvement in symptoms with the help of medication normally had better compliance³⁹, it was supported with our result that showed 69% of patients who expressed adequate response to analgesics were adherent. Contrary to the current result, patients who were suffering from chronic diseases, especially those with fluctuation of symptoms were likely to be non adherent. In addition, no reliable clue shows that patients with very severe disease based on clinical evaluation comply better with medications.²⁸

Limitations

This study included outpatients enrolled in pain clinics of only two hospitals. The 2nd limitation is that the study was conducted in one locality (Mansoura), and on patients affiliated to Islam to test the effect of religiosity on adherence, as Islamic culture is predominant in Egypt; however those were the available group who accept to join our study. Another limitation was the possibility of recall bias and over estimation as the method of drug adherence was self report. However it was still believed that self report has an equal precision as other physical methods.¹⁷ Although, this study has limited generalizability of results, it provides practical attempt to search the relationship between religious commitment of cancer patients and adherence to pain medications.

Conclusions

The study indicates significant factors relating to analgesic adherence, the religiosity was the dominating one and could be helpful to improve adherence to pain medications among cancer patients particularly in countries with strong religious believes including Egypt. However adherence of cancer patients is still a complicated multifactorial issue in palliative care. Additional studies are needed, particularly those that indicate how to improve adherence to pain medications among those desperate group of patients.

Conflict of interest

There is no conflict of interest.

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