

Association of Coping Strategies and Medication Adherence: A Systematic Review

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Abstract

Background: Medication adherence is difficult for most patients who take at least one medication. Poor drug adherence is a developing problem since it contributes to negative outcomes, prescription waste, increased healthcare expenses, and disease progression. Coping strategies are an important tool for managing a patient's condition because a patient's coping method influences how he or she perceives the situation and deals with the stress that comes with it, which can eventually affect adherence. Coping strategies are classified into five categories: problem-focused, emotion-focused, seeking understanding, support seeking, and problem avoidance.

Objective: The goal of this study is to examine and illustrate the association of coping strategies on medication adherence.

Method: A systematic review of PubMed/MEDLINE database was conducted in order to screen and select articles. A total of 15 studies were included where they were classified by endpoints. Endpoints that were considered are medication adherence, problem-solving/active coping strategy, emotion-focused coping strategy, seeking understanding coping strategy, support seeking coping strategy and problem avoidance coping strategy. The association of each coping strategy on medication adherence was then evaluated from each article assigned to every category of coping strategies to determine if it had a favorable, negative, or no impact on medication adherence.

Results: Most studies which measured problem-solving/active coping strategy (78%) had a positive association on medication adherence, followed by studies which measured emotion-focused coping strategy (69%). Majority of the studies that evaluated for problem avoidance coping strategy (50%) showed a negative association on medication adherence and a small proportion of studies (30%) showed a positive association. Four(4) of the 5 coping strategies (problem-solving/active, emotion-focused, seeking understanding and support seeking) were found to have a greater number of studies showing positive association to medication adherence as opposed to problem avoidance.

Conclusion: The findings may suggest that problem-solving and emotion-focused coping strategies can be useful to help people with chronic conditions improve their medication adherence. More study is needed to establish a link between coping strategies and medication adherence in patients, which will allow pharmacists and other healthcare professionals to deliver better interventions to patients and assess for medication nonadherence due to poor coping skills.

Keywords: coping strategies; medication adherence; problem-solving/active coping; emotion-focused coping; seeking understanding coping; support seeking coping; problem avoidance coping

INTRODUCTION

Medication adherence can have a substantial impact on the length and quality of life, health outcomes and healthcare expenses (Kim, Combs, Downs, & Tilman, 2018). Medication adherence refers to patients taking their medications as prescribed by their provider and whether they continue to take their medication for an extended period of time (Ho, Bryson, & Rumsfeld, 2009). Medication nonadherence is a significant issue that results in significant illness progression, death, and increased health-care expenses for patients (Jose & Jimmy, 2011). It is estimated that medication nonadherence accounts for up to 50% of treatment failures, approximately 125,000 deaths, and up to 25% of hospitalizations each year in the United States (Kim et al., 2018).

Current literature revealed that nearly 50% of patients who take at least one medication find medication adherence challenging (Jose & Jimmy, 2011). This is more common in patients with chronic illnesses which require complex, life-long medication regimens (Shruthi, Jyothi, Pundarikaksha, Nagesh, & Tushar, 2016). Chronic diseases are usually life-long conditions and medication adherence is fundamental in improving their health outcomes and preventing further disability.

Medication adherence can be influenced by certain clinical (e.g. severity of disease, duration of treatment and medication side effects), demographic (e.g. financial resources and cost of care) and psychological factors (Lehmann et al., 2013; Shallcross et al., 2015). One way which could be used to deal with psychological factors is coping (Bąk-Sosnowska, Gruszczynska, Wyszomirska, & Daniel-Sielańczyk, 2022). Coping refers to individuals' efforts to manage stress that stems from their perception of a life situation, regardless of whether the approach of dealing with stress is adaptive or not (Jason, Glantsman, & O'Brien, 2019). Utilizing coping strategies may be

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effective in influencing how patients deal with the associated stress due to the perception of their disease which may improve medication adherence as they are motivated to take an active approach when managing their illness leading to better outcomes (Bak-Sosnowska et al., 2022).

There are five types of coping strategies: problem-focused, emotion-focused, seeking understanding, support seeking and problem avoidance. The problem-focused or active coping strategy typically involves confronting a problem directly in order to resolve it. Emotion-focused coping entails expressing feelings or engaging in emotional activities such as exercise, meditation, wishful thinking, or spirituality. The seeking understanding coping strategy refers to the process of attempting to comprehend a situation or problem, as well as searching for the meaning in the experience. The seeking help or support-seeking coping strategy entails employing others such as family or friends as a resource to assist in addressing the problem, whereas problem-avoidance or denial coping usually entails attempting to ignore the problem or the potential solution (Jason et al., 2019).

Certain coping strategies have been suggested to influence medication adherence of chronically ill patients or those who particularly have difficulty with adherence (Berner, Erlacher, Fenzl, & Dorner, 2019). However, little is known about how each type can affect medication adherence or how adherence and coping are associated. Only a small number of studies in the current literature measured the coping strategies and their associations with medication adherence in patients, highlighting the need for additional research. Therefore, the primary objective of this study is to evaluate and illustrate the association of coping strategies and medication adherence using existing literature.

METHODS

Article Selection

A literature search was conducted on the PubMed/Medline database to identify original research articles that evaluated any association between coping strategies and medication adherence in published literature. Search terms included “coping strategies” and “medication adherence”, “impacts of coping on medication adherence” and “association of coping” and “medication adherence.” The initial search results were then further narrowed to include clinical trials, systematic reviews, prospective cohort studies, qualitative studies (i.e. focus groups) and cross-sectional studies published from 1980-2021 written in English. The search excluded books and documents and articles published in a foreign language (non-English). The abstract and results section of each study from the initial search were reviewed to identify the studies that measured medication adherence and any of the coping strategies as endpoints and assessed their association. A total of 15 articles were then selected for further analysis.

Classification

Two researchers (AC, SL) reviewed the 15 articles identified and categorized them based on the coping strategies that they measured as endpoints. The coping strategies of interest were problem-solving/active coping, emotion-focused coping, seeking understanding coping, support seeking coping and problem avoidance coping (Figure 1). When the two researchers disagreed on categorization, a consensus was reached after an in-depth discussion. Factors that were discussed included specific tools that were used to measure the coping strategies of interest (Figure 1) as well as the findings expressed. The articles were further categorized based on the relationship (positive, negative, or no significant relationship) between the coping strategy end points and medication adherence. This was assessed through an evaluation of the results and statistics (p values, Pearson coefficient [r] values) and conclusion of each article. Once the relationships were determined, the number of articles that showed positive, negative, and no associations was counted for each coping strategy endpoint.

Figure 1: Criteria of Measured Endpoints

<i>Medication Adherence:</i>	Studies that utilized instruments, questionnaires and/or scales to measure medication adherence in a patient population as final endpoints (such as: Morisky Medication Adherence Questionnaire, Medication adherence scale, self-reported medication adherence, Vasculitis Self-Management Survey (VSMS), dose, pill and time adherence scales).
<i>Problem-focused or Active Coping Strategy:</i>	Studies that included final endpoints relating to problem-focused or active coping strategy. These studies measured problem-solving and/or active coping skills using various surveys and questionnaires in a patient population (such as coping inventory for stressful situations; Freiburg Questionnaire of Coping with Illness (FQCI); Miller Behavioral Style – Monitor; task-oriented coping and problem-focused coping surveys)
<i>Emotion-focused Coping Strategy:</i>	Studies that included final endpoints involving emotional coping. These studies utilized surveys and tools to investigate emotional coping skills in study participants (such as religiosity or spirituality questionnaires –The Systems of Belief Inventory; WHOQOL-SRPB – World Health Organization Quality of Life Spirituality, Religiosity, and Personal Beliefs; Essen Coping Questionnaire (ECQ)-4 Stanine Trivialization and Wishful Thinking; Coping Inventory for Stressful situations, Brief COPE (acceptance); emotional coping scale; Freiburg Questionnaire of Coping with Illness).
<i>Seeking Understanding Coping Strategy:</i>	Studies that included final endpoints involving seeking understanding coping skills. Studies that utilized instruments or tools to measure the influence of information seeking and exchange of experience in study subjects with medication adherence issues.
<i>Support-seeking Coping Strategy:</i>	Studies that included final endpoints relating to support-seeking coping strategy. Studies that used scales to measure the influence of social relationships, financial support and social support (e.g. role of family, friends and support groups and ECQ-6 Stanine Willingness to accept help) towards medication adherence.
<i>Problem Avoidance Coping Strategy:</i>	Studies that included final endpoints relating to problem avoidance coping strategy. Studies that measured problem-avoidance coping strategy in participants using tools such as Brief COPE (denial); avoidance-oriented scale; Freiburg Questionnaire of Coping with Illness (FQCI); Miller Behavioral Style (Blunter).

RESULTS

Summary of Studies

In the retrieved study articles included in this review, emotion-focused, problem-avoidance and problem-solving/active coping strategies are commonly measured versus seeking understanding and support-seeking coping strategies

(Table 1). These articles are further grouped into coping strategies measured as endpoints as seen in Table 2 below. The articles are further categorized to quantitatively show the number studies with either a positive, negative or no association between the types of coping strategies and medication adherence (Figure 2).

Title of study (author/year)	Study design	Number of participants	Type(s) of coping measured	Relationship with medication adherence
<i>A Longitudinal Evaluation of a Social Support Model of Medication Adherence Among HIV-Positive Men and Women on Antiretroviral Therapy</i> (Simoni, Frick, & Huang, 2006)	Correlational	136	Emotion-focused Support-seeking	Positive Positive
<i>Association of coping strategies with mortality and health-related quality of life in hemodialysis patients: The Japan Dialysis Outcomes and Practice Patterns Study</i> (Niihata, Fukuma, Akizawa, & Fukuhara, 2017)	Cohort	1354	Emotion-focused Problem-solving/active Support-seeking Problem-avoidance	Negative Positive Negative Negative
<i>Associations between coping, diabetes knowledge, medication adherence and self-care behaviors in adults with type 2 diabetes</i> (Smalls et al., 2012)	Correlational	378	Emotion-focused	Positive
<i>Coping and medication adherence in bipolar disorder</i> (Greenhouse, Meyer, & Johnson, 2000)	Cross-sectional	32	Emotion-focused Problem-avoidance	Positive Negative
<i>Denial and Acceptance Coping Styles and Medication Adherence in Schizophrenia</i> (Aldebot & Weisman De Mamani, Amy G, 2009)	Cross-sectional	40	Emotion-focused Problem-avoidance	None Negative
<i>Does religiosity in persons with schizophrenia influence medication adherence?</i> (Grover, Triveni, & Chakrabarti, 2021)	Cross-sectional	100	Emotion-focused	Positive
<i>Financial Distress, Use of Cost-Coping Strategies, and Adherence to Prescription Medication Among Patients With Cancer</i> (Zullig et al., 2013)	Cross-sectional	164	Problem-solving/active Support-seeking Problem-avoidance	Positive Negative Negative
<i>Influence of Major Coping Strategies on Treatment Non-adherence and Severity of Comorbid Conditions in Hemodialysis Patients</i> (Hwang et al., 2018)	Correlational	49	Emotion-focused Problem-solving/active Support-seeking	Negative Positive Positive
<i>Medication Adherence and Coping Strategies in Patients with Rheumatoid Arthritis: A Cross-Sectional Study</i> (Berner, Erlacher, Fenzl, & Dorner, 2019)	Cross-sectional	120	Emotional-focused Problem-solving/active Seeking understanding Problem-avoidance	Positive Positive None None
<i>Medication Adherence and Coping with Disease in Patients from a Neurological Clinic: An Observational Study</i> (Franke, Nentzl, Jagla-Franke, & Prell, 2021)	Cohort	545	Emotion-focused Problem-solving/active Seeking understanding Support-seeking Problem-avoidance	Positive None None None Positive
<i>Medication-related Self-management Behaviors among Arthritis Patients: Does Attentional Coping Style Matter?</i> (Geryk et al., 2016)	Correlational	328	Seeking understanding Problem-avoidance	Positive Negative
<i>Patient experiences and strategies for coping with SLE: A qualitative study</i> (Case et al., 2021)	Qualitative	13	Emotion-focused Problem-solving/active Seeking understanding	Positive Negative Positive
<i>Psychological coping and recurrent major adverse cardiac events following acute coronary syndrome</i> (Messerli-Bürgy et al., 2015)	Cohort	158	Emotion-focused Problem-solving/active Problem-avoidance	None Positive None
<i>Selected psychological aspects and medication adherence in oncological patients</i> (Gruszczyńska, Bąk-sosnowska, & Szemik, 2019)	Correlational	102	Emotion-focused Problem-solving/active Support-seeking Problem-avoidance	Positive Positive Positive Positive
<i>Therapeutic adherence and coping strategies in patients with multiple sclerosis</i> (Corallo et al., 2019)	Correlational	88	Emotion-focused Problem-solving/active Problem-avoidance	Positive Positive Positive

Table 1: Summary of the 15 studies included in this review highlighting the type of study design, number of subjects included, type(s) of coping measured as endpoints and their relationship with medication adherence.

Endpoints Measured

A total of 15 articles that measured medication adherence and at least one coping strategy type as endpoints were included in the analysis. The emotion-focused coping strategy (n = 13) was found to be the most common endpoint followed by problem-

avoidance (n = 10) and problem-solving/active coping strategies (n = 9). The seeking-understanding (n = 4) and support-seeking coping (n = 6) strategies were seen to be expressed in the least number of articles (Table 2).

Endpoints	Number of Articles (n=15)
Emotion-focused	13
Problem-avoidance	10
Problem-solving/active	9
Support-seeking	6
Seeking understanding	4

Table 2: Number of study articles that assessed each type of coping strategies as their endpoints: emotion-focused coping, problem-avoidance coping, problem-solving/active coping, support-seeking coping and seeking understanding coping (all 15 articles measured medication adherence commonly).

Types and Percentages of Associations between Coping Strategies and Medication Adherence

Among the articles which measured the problem-solving/active coping strategy, 78% showed a positive association with medication adherence in patients. With regards to emotion-focused strategy, 69% showed a positive association. Both coping strategies showed a similar distribution of studies for negative and no association towards medication adherence. The studies that evaluated seeking-understanding coping showed either a positive association (50%) or no association

(50%) with medication adherence. Negative association between seeking-understanding and medication adherence was not found in any articles. Among the studies which measured support-seeking coping, 50% showed a positive association with medication adherence, 33% showed a negative association and 17% showed no association. The studies which measured problem-avoidance coping showed a slightly different distribution. Most of them (50%) showed a negative association with medication adherence while 30% and 20% showed a positive or no association respectively (Figure 2).

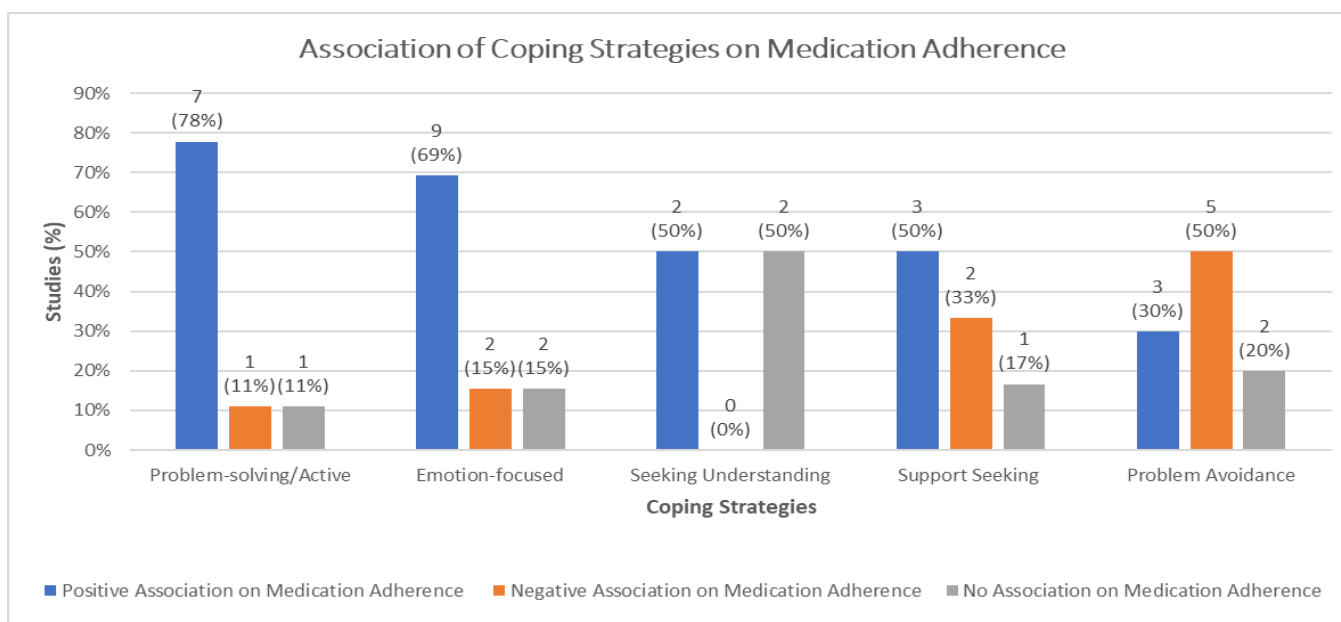


Figure 2: The percentages of the association types between coping strategies and medication adherence evaluated by the study articles. A total of 9 studies assessed problem-solving/active coping strategy, 13 studies assessed emotion-focused coping strategy, 4 studies assessed for seeking understanding, 6 studies assessed support seeking coping strategy and 10 studies assessed problem avoidance coping strategy.

DISCUSSION

Various patterns of associations between medication adherence and the coping strategies were found through the literature review and analysis. Of the studies that measured problem-solving/active coping, most studies (78%) found the particular coping style to have a positive association, while a small number of studies (11%) showed a negative association (Figure 2). For instance, one cross-sectional study which evaluated whether coping strategies (problem-solving/active, emotion-focused and problem avoidance) were associated with medication adherence in patients with rheumatoid arthritis found a higher rate of medication adherence in patients who relied on active coping. However, the study was conducted with a small sample size (n = 120) and the external validity of its

findings is questionable (Berner et al., 2019). Problem-solving or active coping which includes deliberate problem-solving and cognitive restructuring can be used to reduce stress by identifying problems and providing alternative solutions (Graven, Lucinda J., MSN, ARNP & Grant, Joan S., DSN, RN, 2013). This type of coping can be utilized in clinical practice particularly in patients with chronic conditions in order to deal with stress proactively relating to medication compliance.

In contrast, one qualitative study showed that patients with chronic systemic lupus erythematosus (SLE) were reluctant to embrace other forms of problem-solving coping style such as engaging with technology (e.g. mobile health apps and online health programs) in their management of chronic SLE or medications. These health technologies offered various ways to help manage their condition such as home-based exercise programs, symptom trackers or medication diaries (Case et al., 2021). Although there is an uncertainty to the reason of unwillingness to engage in other forms of active coping, it may be speculated that patients with chronic illnesses are less interested in actively managing their conditions due to other illness-related distractions such as complications from the disease, deterioration of quality of life, and healthcare expenses.

Among the studies which measured problem-avoidance or denial coping, 30% found a positive association with medication adherence, while 50% showed a negative association. One study which assessed denial coping and medication adherence in schizophrenia patients found that patients who dealt with the stress of their illness by either pretending that they were not ill or by ignoring the severity of their symptoms were less likely to take medications as prescribed (Aldebot & Weisman de Mamani, 2009). Prior studies also showed that patients who relied on denial or problem-avoidance coping had a higher mortality rate compared to those who used problem-solving or active coping skills (Graven, Lucinda J., MSN, ARNP & Grant, Joan S., DSN, RN, 2013). Patients who employ denial coping may be less motivated to learn about their illness and take steps to care for their symptoms.

Most studies (69%) which measured emotion-focused coping found a positive association with medication adherence (Figure 2). Similar to problem-focused or active coping, the emotion-focused coping strategy was found to be beneficial when dealing with chronic illnesses and other life circumstances as it may be useful in assisting those diagnosed with a chronic disease to adjust living with their condition (Smalls et al., 2012). Although, this method of coping may not directly address the issue, it is an important tool for handling stressful circumstances that are out of one's control. However, the studies had small sample sizes and were not diverse in order to make the results generalizable.

No literature found a negative association between seeking-understanding coping and medication adherence. However, an equal number of studies found a positive or no association between the two endpoints. One particular qualitative study explored chronic systemic lupus erythematosus (SLE) patient experience and their coping strategies. Patients learned useful skills for disease management such as empathy, medication adherence routines, resilience, task-prioritization, and self-care based on their experiences with SLE in their early adulthood (Case et al., 2021).

Among the studies that evaluated the support-seeking coping strategy, 50% found a positive association with medication adherence (Figure 2). This type of coping which includes social support from family, friends or support groups has been effective in helping patients cope with their stressful situations and has shown to be one of the most significant factor in well-being and health (Aflakseir & Coleman, 2009).

In summary, based on current literature, a positive association with medication adherence was more predominantly observed in problem-solving or active, emotion-focused, seeking understanding and support seeking coping. A negative association was more frequently found in problem avoidance coping.

Strengths and Weaknesses

Utilizing a systematic review approach in identifying articles that align with the study objectives was appropriate as it enabled comprehensive understanding of the area of interest. Also, the quick categorization of the studies yielded a handy summary of the current knowledge published in the literature.

The current study, however, was very limited in the number of articles included to be analyzed. The majority of the articles included in this study had a small sample size and relied on self-reported adherence by the patients which could have led to biased findings. In addition, most studies included in the analysis were cross-sectional, and the associations reported by them do not establish a causal relationship. Furthermore, a few studies had results that may not be applicable to the general population, as the study participants were from a particular region or location. More than fifty percent (50%) of the studies

did not enroll patients who were over 65 years of age. This may limit the study findings since chronic illnesses and challenges in managing complex regimens are more prevalent in elder populations.

Recommendations for Future Research

Considering the potential positive impact of the coping strategies on medication adherence, more robust research is necessary. Unlike most studies included in the analysis, more longitudinal studies are needed in order to better understand a correlation or any causal relationships between the coping strategies and medication adherence. The seeking understanding coping strategy requires more extensive research, since no articles found a negative association between the two endpoints of interest. A larger and more diverse sample should also be utilized to make findings more generalizable.

CONCLUSION

The findings from the current study indicate that the problem-focused/active coping strategy had the highest number of studies showing a positive association with medication adherence followed by the emotion-focused coping strategy. The problem-avoidance coping strategy had the highest number of studies showing a negative association with medication adherence. Since most of the articles included in this study were observational, more extensive research is needed to infer a cause-effect relationship between the coping strategies and medication adherence. This can help guide healthcare practitioners when providing patient interventions and assessing for medication nonadherence in order to help patients achieve a better therapeutic outcome.

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