

Introduction to Lit Review should

- Introduce subject and problem
- Clearly state purpose
- Cite key sources and data
- Narrow the topic

CHAPTER 2: LITERATURE REVIEW

Subject

Chronic Asthma

Chronic conditions are often the catalyst for physical, psychological, and financial burden. Individuals suffering from asthma often demonstrate difficulties in managing their condition as well as altering their lifestyle to include factors such as healthy exercise routines and appropriate environmental surroundings.

Asthma, which is a chronic inflammatory disease of the airways, has been on the rise over the past decade with increasing prevalence within children in the United States (Centers for Disease Control and Prevention [CDC], 2009). It is estimated that a total of 22 million individuals suffer from asthma, with nearly 6 million of these individuals being children (National Institutes of Health [NIH], 2008).

Physical side effects of the condition include coughing, wheezing, shortness of breath, and chest tightness (NIH, 2008). These symptoms could greatly impact the quality of life experienced by the asthmatic individual due to restriction of activity, discomfort, embarrassment, and the constant concern for their condition.

It is crucial to identify such conditions early on and implement appropriate treatment given that patterns of behavior developed during childhood serve as predictors of development of adult disease (Rand, Auinger, Klein, & Weitzman, 2005); thus, poor management of asthma in childhood and adolescence can lead to ineffective management in adulthood. This increases the risk of developing additional diseases such as obesity or cardiac disease due to the restrictions (such as exercising) placed on an individual with improperly managed asthma.

Furthermore, the severity of asthma as a chronic condition is demonstrated in that approximately 5,500 individuals die from asthma-related emergencies each year,

Key Sources

Key Sources

Purpose

Problem

Key Data

Key, current
data

and the overall financial costs of asthma reached an estimated \$18 billion in 2009 (Asthma and Allergy Foundation, 2010).

Treatment for Chronic Asthma

Topic
Sentence

Although it is generally a chronic condition, asthma can be controlled through effective lifestyle and medical management. Environmental exposure to allergens and air pollutants can cause and exacerbate the symptoms of asthma, but symptoms can be reduced through the regulation of environmental exposures and the use of medication. Medication for asthma consists of short-term relief of symptoms and long-term preventative controls, which act to prevent the occurrence of symptoms. The majority of individuals suffering from asthma utilize medication for short-term relief of symptoms, which are most commonly inhaled short-acting beta agonists that act quickly in relaxing the airway muscles once constriction has already occurred (NIH, 2008).

The use of medication for long-term control aims to prevent the symptoms of asthma, including asthma attacks, which are episodes in which breathing is negatively affected due to restriction and inflammation of the airways (NIH, 2008). The most common and preferred long-term treatment is inhaled corticosteroids, which reduce inflammation and subsequently prevent the chain reaction that leads to the presence of symptoms (NIH, 2008). This preventative medication acts by blocking late-phase reactions to allergens, reducing hyperresponsiveness, and inhibiting the activation of inflammatory cell migration (National Heart, Lung, and Blood Institutes [NHLBI], 2007). Corticosteroids are the most potent and effective anti-inflammatory medication currently available to individuals with asthma and other chronic lung disease (NHLBI, 2007). Thus, the use of medication for long-term control is often prescribed on a daily regimen and

greatly reduces the occurrence of symptoms. A report published by the Global Initiative for Asthma [GINA] (2009) stated that the use of corticosteroids can result in improved lung functioning in as little as 1 week, while discontinuing the use of corticosteroids can result in deterioration in asthma symptoms within weeks.

Transition	In addition , research has demonstrated a close relationship between asthma
Paragraph unity	and allergic rhinitis (Annesi-Maesano, 1999). This suggests that individuals with asthma often experience an exacerbation of symptoms due to allergies to
Paragraph unity	substances such as dust, pollen, or dander. This occurs when an individual breathes in substances, such as those previously mentioned, thus initiating the
Paragraph unity	onset of symptoms (such as itchiness, runny nose, watery eyes, sneezing). These symptoms are closely related to the onset of asthmatic symptoms (Annesi-
Transition	Maesano, 1999). Thus , treatment for individuals with asthma often includes medication to treat both asthma and allergies in order to more effectively control
Paragraph unity	the condition. Such regimens targeting the treatment of both asthma and allergy symptoms have been found effective in establishing control over the onset of
	symptoms (Bochenska-Marciniak et al., 2009).

Topic narrows/thesis statement	<p>Despite the effectiveness of medication in the control of asthma symptoms, nonadherence to medical regimens often creates a barrier to successful intervention. In other words, the potential effectiveness of medication in controlling a wide range of conditions is being thwarted by a problem of human behavior. In the case of nonadherence it is crucial to examine the environmental contingencies affecting human adherence behavior in order to resolve the issue.</p>
--------------------------------	--

LR arranged by
theme/idea

Rates of Nonadherence to Medical Regimens

Despite the medical advancements in treating chronic disease, nonadherence reduces the effectiveness of medical regimens in controlling the symptoms of various conditions. Individuals suffering from a variety of chronic disease often depend on medication to control, reduce, or prevent symptoms from occurring. However, nonadherence continues to be a problem in the effective treatment of such disease. In a quantitative meta-analysis of adherence literature, DiMatteo (2004) examined 569 studies on adherence that were conducted over a 50-year period (1948-1998). Studies that defined and measured adherence to a prescribed medical regimen or preventative regimen (such as exercising) were included in the review. Results of the analysis indicated that adherence ranged from 4.6% to 100% with a median of 76% and an average adherence rate of 75.2%. The results of the meta-analysis represent the widespread problem of adherence among individuals prescribed a medical regimen.

Research has shown that nonadherence is a significant problem for acute illnesses (Hoppe, Blumenstock, Grotz, & Selbmann, 1999; Mattar, Markello, & Yaffe, 1975), chronic conditions such as asthma (McQuaid, Kopel, Kelin, & Fritz, 2003), and even for conditions in which the effects of nonadherence can potentially be life threatening (Korsch et al., 1978). For example, Mattar et al. (1975) evaluated rates of adherence in children with otitis media, a typically acute illness. Patients (n=100) aged between 1 and 12 years old were prescribed an antibiotic regimen for otitis media. A follow-up appointment was scheduled and the amount of antibiotics consumed over a 10-day period was measured (taking into account the size of the spoon used to deliver medication). Results of the study indicated that only 5% of participants (n=100) demonstrated full compliance, thus indicating that 95% of participants failed to demonstrate adherence to medical

Selected sources
by theme

regimens. Sublett, Pollard, Kadlec, and Karibo (1979) further demonstrated the issue of nonadherence for individuals with asthma. In examining salivary theophylline (a medication used to treat respiratory disease) levels of participants with asthma, Sublett et al. (1979) found that 98% had levels less than 10 mcg/ml with 75.5% due to low levels of medical adherence. Furthermore, Korsch et al. (1978) demonstrated the problem of nonadherence in circumstances in which the side effects of nonadherence are potentially fatal by examining 14 participants undergoing immunosuppressive treatment following renal transplantation. Results of the study indicated that all participants disrupted the prescribed regimen following transplantation; eight participants lost allograft, or transplant, function and six decreased allograft function. This particular study was especially significant in its demonstration of the perpetuation of nonadherence to medication in circumstances in which nonadherence is potentially fatal, or life threatening.

Source evaluated

Topic sentence

The prevalence of nonadherence has further been demonstrated in adolescents who suffer from chronic conditions, specifically asthma. Several studies of asthmatic children have found that more than half of children on daily regimens for asthma fail to use medication as prescribed (Milgrom et al., 1996, Sherman, Baumestien, & Hendeles, 2001). Kyngas (1999) demonstrated the issue of nonadherence to medical regimens by examining the extent to which adolescents with asthma comply with a prescribed dosage of medications. Results indicated that approximately 51% of adolescents demonstrated low adherence rates to prescribed regimens. McQuaid et al. (2003) assessed adolescent adherence to preventative asthma medications and found an even lower rate of adherence. Participants' medication intake was electronically monitored for a period of 1 month and results indicated that adherence was approximately 48% of prescribed doses. These studies demonstrate both the existence and the alarming

rates of nonadherence for adolescents who suffer from chronic conditions, specifically asthma.

LR arranged by theme/idea

Cognitive Behavioral Approaches in Increasing Adherence

Most commonly, the issue of patient nonadherence to medical regimens has been approached utilizing a cognitive-behavioral model. The theoretical underpinning of such an approach postulates that clinical populations “attend to, remember, and interpret events in ways that are congruent with their disorder” (Wray, Freund, & Dougher, 2009, p. 29). It is assumed that “internal processes and states that mediate between the environment and behavior... explain the behavior” (Zuriff, 1985, p. 161). In other words, it is what the patient understands about the details of the regimen that determines level of adherence, and therefore nonadherence can be attributed to low levels of understanding regarding the medical treatment (Burke & Ockene, 2001). This includes patient comprehension of factors such as biological understanding of disease, schedule of regimen, protocol regarding missed dosage, side effects, and prescription duration. Given this theoretical foundation, cognitive-behavioral approaches seek to identify and modify maladaptive thinking and comprehension regarding the medical regimen in order to effectively increase patient adherence to prescription (Christensen, 2004). The following research is a sample of cognitive-behavioral studies that seek to modify thinking in order to increase adherence to medical regimens among adolescents.

Integrated quotes

Quotes paraphrased in own words

Organized around ideas

Selected sources by theme

Silverman et al. (2003) further demonstrated the use of cognitive-behavioral strategies to increase adolescent adherence to medical regimens among adolescents with diabetes. Participants (N=6) were trained in cognitive restructuring and problem solving during individual sessions. This consisted of

three phases: First, participants conceptualized their adherence efforts with an emphasis on factors that both interfere and facilitate adherence behaviors. The second phase was the skill acquisition and rehearsal phase in which participants learned how to challenge and restructure maladaptive thinking by examining evidence for and against these thoughts (developing alternative explanations).

Study summarized

During this phase, participants were taught to identify the problem, brainstorm solutions to the problem, generate consequences to the potential solutions, and make decisions by weighing in the most desirable outcomes. Lastly, participants applied the skills acquired to hypothetical and potential future adherence issues (thus developing alternative cognitions). Dependent measures of interest consisted of glucose checking, insulin injections, meals and snacks, level of physical activity, and injection-meal timing (which were based on self-report at a 1- and 3-month follow-up). Results of the study demonstrated that the cognitive behavioral intervention had a positive impact on at least one of the five self-care behaviors for

Source evaluated

each participant. Given the low level of change in adherence behavior(s), the present study provides weak support for cognitive-behavioral methods as an effective approach to increasing adolescent adherence.

Selected sources by theme

Furthermore, Van Es et al. (2001) utilized a cognitive-behavioral approach to increase the adherence of 112 asthmatic adolescents. The study examined the effectiveness of the attitude-social influence-self-efficacy [ASE] model, which assumes that adherence behavior is determined by attitudes, social influences, and self-efficacy expectations (derived from the theory of reasoned action and the social cognitive theory). Participants in the experimental group received standard, or usual, care from a pediatrician in addition to attending individual and group sessions with an asthma-specialist. These sessions aimed to increase adolescent adherence by invoking a positive attitude, developing increased feelings of social

support, and enhancing self-efficacy. Results, which were self-reported dependent measures, indicated that there were no statistically significant differences between the control group and experimental group during a 12-month follow-up. Yet, during the 24-month follow-up reported adherence was statistically higher in the experimental group. However, the researchers state that this could have been due to chance given that correction for multiple testing by means of the Bonferonni method resulted in no significant differences between the two groups. The study exemplifies the use of a cognitive-behavioral approach but demonstrates that this approach, based on the ASE model, was ineffective in increasing adolescent adherence throughout the course of the study. Although there were increases in adherence during a follow-up, these changes can be attributed to a multitude of other factors given that there was not an initial increase in adherence during the study. Further, the study demonstrated weakness in that measures of adherence were strictly based on self-reported dependent measures.

Study summarized

Source evaluated

LR arranged by theme/idea

Behavioral Approaches in Increasing Adherence

Although cognitive-behavioral approaches have demonstrated low to moderate levels of effectiveness in increasing patient adherence to medical regimens, such applications of cognitive-behavioral theory have been criticized for not providing a conceptual account “that specifies the environmental determinants or the critical functional relations that are imperative for the prediction and control of the phenomenon” (Wray et al., 2009, p. 29). Unlike cognitive-behavioral approaches, which seek to improve maladaptive thinking, behavioral approaches seek to directly examine the contingencies present in the environment that perpetuate (or fail to perpetuate) the behavior of interest. A behavioral perspective focuses on “relations between behaving persons (or other organisms), the setting

Integrated quote

conditions of behavior, and its consequences: behavior in its context” (Chiesa, 1994, p. 201). Thus, a behavior analytic approach seeks to analyze and alter the environmental contingencies present in order to promote the occurrence of a target behavior, in this case adherence behaviors to prescribed medical regimens.

Selected sources
by theme

Schafer, Glasgow, and McCaul (1982) examined the effectiveness of behavioral approaches for increasing adherence to prescribed medical regimens among diabetic adolescents. During the study, three self-management components

(self-monitoring, goal-setting, and behavioral contracting) were sequentially introduced. Adolescents (n=3) diagnosed with diabetes participated in the study which began with a self-monitoring baseline. During this phase, participants simply monitored their asthma and medication intake. If no improvement in adherence was established via self-monitoring, then goal setting was introduced in which the participant, parents, and therapist decided upon the most effective manner in which the regimen could effectively be integrated into the participant’s daily routine. For example, one participant was allowed to go back to bed on weekends if he woke up to take his medication and eat breakfast on time.

Study summarized

Adherence goals approximately halfway between baseline levels and 90% compliance were developed for each participant in this condition. Thus, adherence level goals were established and all relevant individuals decided upon feasible schedules (both daily and weekly) that would not interrupt the adolescent participant’s daily routine while maintaining goal-levels. If the participant failed to achieve a compliance rate of 90% by the end of the goal-setting phase, the contingency contracting phase was implemented (reinforcers were administered by parents and included activities, tangibles, etc). The results of the study indicated that goal setting was an effective intervention for increasing and maintaining adherence at close to optimum levels for two of the three adolescent participants.

According to the researchers, the lack of significant improvement in the third participant may have been due to confounding variables present in the home

Source evaluated

environment. The significance of this study was its demonstration of the effectiveness of behavioral strategies (self-monitoring, goal setting, and contingency contracting) in increasing adolescent adherence to medical regimens.

Selected sources
by theme

To further examine the utility of behavioral strategies to improve adherence, Da Costa, Rapoff, Lemanek, and Goldstein (1997) studied the effectiveness of a combined education and token system intervention in improving medication adherence in asthmatic children (n=2) aged 8 and 10 years old. A withdrawal design was used in which a single educational session on asthma was conducted, followed by the implementation of a token system in which points were earned and traded for privileges (consequently, privileges were lost for 1 day if a prescribed medication was not taken). Results of the study indicated that adherence increased in the initial phase of the intervention, and decreased when

Study summarized

the intervention was withdrawn. Although one participant's parents declined to reintroduce the token economy, there were improvements in adherence for the participant who was exposed to the second phase of the intervention (reimplementation of the token economy). Furthermore, for the participant who was exposed to the second phase of intervention, there were significant improvements in pulmonary functioning in the first phase of treatment (yet, these improvements did not decline when intervention was withdrawn); However, during follow-up sessions (at 3 months, 6 months, and 14 months) with this participant, adherence did decrease. Despite the low maintenance of the effects of

Source evaluated

the intervention, the present study was significant in its application of behavior analytic principles and its demonstration of the potential effectiveness as an approach in increasing medical compliance among adolescent participants.

Selected sources
by theme

Cass, Talavera, Gresham, Moser, and Joy (2005) demonstrated the effectiveness of utilizing behavioral applications, specifically self-monitoring and positive reinforcement, in increasing the adherence behaviors of adolescents diagnosed with latent tuberculosis infection. Participants (n=1714) were given a monthly calendar with a supply of stickers and were instructed to place a sticker on each day that medication was taken. At the end of the month, the completed calendar was returned to medical staff and the adolescent participant was able to choose a preferred item from the treasure chest. Results indicated that, of participants who completed the study (n=1582), the treasure chest (positive reinforcement) intervention significantly increased adherence to treatment for latent tuberculosis infection. Although significant results were yielded, the present study was limited in that a group design was used, thus limiting the ability to analyze the effect of the intervention at the individual level. In addition, the dependent measure of interest for adherence was based on self-report without measures of treatment integrity, reliability, or validity. Yet, despite these limitations, the study was robust in its ability to demonstrate the effectiveness of behavioral interventions in increasing reports of adolescent adherence to medical regimens for the average participant.

Source evaluated

LR arranged
by theme

Behavioral Self-Management

Behavioral self-management, which is a strategy based on behavioral principles, can be defined as “the personal application of behavior change tactics that produces a desired change in behavior” (Cooper, Heron, & Heward, 2007, p. 578). There are numerous behavioral self-management techniques that have been demonstrated as effective methods in producing behavior change (Cooper et al., 2007). Most commonly, a self-management program intended to occasion

behavior change consists of multiple components. For example, within a self-management program, one can include self-monitoring, self-evaluation, goal-setting, and reinforcement. Components such as those previously mentioned have been empirically validated as effective methods in changing behavior for various populations across various settings (Cooper et al., 2007).

Specifically, self-monitoring, a commonly included component of a self-management program, is when a person observes his or her own behavior systematically and records the occurrence (or lack of occurrence) on a regular basis (Cooper et al., 2007). This requires individuals to observe, evaluate, and record aspects of their own behavior, usually in an attempt to increase or decrease the occurrence of a pre-identified target response. The principle underlying the effects of self-monitoring is reactivity, which refers to the effects of a measurement procedure on an individual's behavior (Cooper et al., 2007). Thus, when an individual is recording and analyzing the occurrence of a behavior, they react to the measurement procedure (in this case recording the behavior) thus provoking a change in behavior. Research has demonstrated that behavioral self-monitoring is an effective method in increasing desired behavior, as well as decreasing inappropriate behavior in adolescents. For example, behavioral self-monitoring has demonstrated its ability to change behavior in a clinically desirable direction in adolescents demonstrating pica (Bhandari & Agarwala, 1996), adolescents suffering from behavior disorders (off-task/disruptive behavior); (Lam, Cole, Shapiro, & Bambara, 1994), as well as increasing sight word acquisition in adolescents in a general education setting (Lalli & Shapiro, 1990).

Topic sentence

Furthermore, other aspects of self-management programs integrated with behavioral self-monitoring have been demonstrated as an effective means for behavioral change. Ninness, Fuerst, Rutherford, and Glenn (1991) demonstrated

Selected sources
by theme

the use of a self-management program that included self-instruction, monitoring, evaluation, and reinforcement to decrease adolescent (n=3) off-task or socially inappropriate behavior in the absence of an instructor. This included social skill training (to teach appropriate behaviors) and implementing a monitoring system in which adolescents recorded both off-task and on-task behaviors (previously defined) and were reinforced for appropriate behavior. Results suggested substantial improvements in the classroom setting in the absence of an instructor, thus suggesting the effectiveness of multicomponent self-management programs.

Topic
sentence

To further validate the effectiveness of self-management programs for adolescents, studies have analyzed the effects of self-management programs in comparison to adult-facilitated programs. Mithaug and Mithaug (2003) examined the effects of teacher-created versus student-created management programs within a school setting. Results suggested that students engaged in more self-

Selected sources
by theme

management behaviors when completing independent work following student-directed instruction. This demonstrates the importance of including a child in the development of his or her self-management program in order to increase the child's engagement with the program. Furthermore, Tiger, Fisher, and Bouxsein (2009) examined the effects of therapist-monitored differential reinforcement of other behaviors (DRO) procedure compared to the effects of a self-monitored DRO procedure for an adolescent who demonstrated self-injurious skin picking.

Selected sources
by theme

Results demonstrated that both therapist-monitored DRO procedures and self-monitoring procedures were both effective at reducing the level of skin picking to 0%. Both the aforementioned studies are significant in that they further

Sources evaluated

demonstrate the effectiveness of self-management as a means of behavior change in adolescents as well as addressing the need to examine various aspects of

management programs (such as development and implementation) that are effective in an adolescent population.

Gap in the literature

Despite the empirically demonstrated effectiveness of behavioral self-management in adolescent populations, there fails to be an effective analysis of its effects, in its own right, in increasing adherence to daily medical regimens. Given that adolescence is often characterized by transitions from full parental-regulation, to partial or full self-management of behavior, including any required prescribed dosage of medication, it would be beneficial to examine the effects of self-management as compared to the effects of parental-management in increasing adherence behaviors. Such an analysis may lead to better methods of increasing adolescent adherence to medication and subsequent positive clinical effects. Further, the present research will contribute to the literature on behavioral approaches to increasing medical adherence.

Where the current study contributes new knowledge

Summary discusses what you have drawn from the LR thus far and indicates where your study might go.

Summary

Asthma is a highly prevalent chronic condition that affects numerous children and adolescents. Although the condition can be effectively managed by appropriate environmental control, daily preventative medications are an effective method of controlling asthma and its symptoms; however, the issue of nonadherence reduces the effectiveness of such medications. It is estimated that pediatric adherence rates is as low as 50% for conditions that require medical treatment (Korsch et al., 1978). Thus, the effectiveness of such medications to treat asthma relies on the willingness of individuals to change their own behavior.

The most common approach to increasing adolescent adherence to medical regimens is a cognitive-behavioral approach. This approach seeks to identify and modify maladaptive thinking in order to increase adherence and has, thus far,

shown only mild to moderate improvements in adherence. Behavioral approaches, on the other hand, seek to evaluate factors in the environment that perpetuate (or fail to perpetuate) adherence behavior. These approaches have integrated reinforcement, token systems, and goal setting, but have not examined the effect of a multicomponent self-management program in increasing adherence among adolescents with asthma. Additionally, research in behavioral self-management has revealed the importance of involving a child in the development of a self-management program. There is further evidence that the effectiveness of a behavioral management program can vary depending on who implements the management program.

Purpose clearly
stated

Purpose of Research

The present study examined the effectiveness of self-management versus parental-management in increasing adherence to prescribed medical regimens among adolescents diagnosed with asthma. Subsequent effects on clinical outcome and reported quality of life were also examined.