Principles of Longevity and Aging: Interventions to Enhance Older Adulthood

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Abstract

Healthy aging and prevention efforts for the elderly warrant attention in a world where the average mortality rate continues to increase. The current literature review is an overview of current findings related to healthy aging and recommendations for older adults who are living longer and healthier; as well as facing the physical and psychological challenges that come with extended life. Staying active, eating right, utilizing social and environmental resources, employing coping skills developed across the lifespan, as well as developing new strategies can enhance the quality of life for older adults. Helping professionals from all disciplines who are able to recognize the needs of this growing group, and recognize the resiliency factors inherent in healthy aging, have the best chance of designing and implementing successful preventionand intervention efforts. The purpose of the present literature review is twofold: 1) To systematically review the important factors that affect an individual's longevity and to raise awareness of the importance of those factors that are within one's control; and 2) To inform health care providers of prevention efforts important to older adults; encouraging an integration of research and practice to preventative efforts.

Keywords: Aging, Gerontology, Diet, Exercise, Substance abuse, Stress

1. Overview

Human beings are surviving much longer and the population over 55 is expanding exponentially with expectations of growth as high as 41% by 2041 in the United States (de Vaus & Wolcott, 1997; Snarksi, Scogin, DiNapoli, Presnell, McAlpine, & Marcinak, 2010). This "graying of America" has unavoidable implications for health care practitioners across disciplines. Up until recently, most prevention efforts for aging adults were actually tailored to middle-aged adultsor infirm older adults. Of note, research points out the consistently poor response of older adults to these interventions efforts usually effective with younger individuals (Alexopoulos, Raue, & Arean, 2003; Nebes, Butters, & Mulsant, 2000). Little is known about personality or environmental variables, which enhance the experience of aging, outside of research in health care settings and very few researchers, focus on positive aspects of coping with growing older (e.g., Row & Kahn, 1998; Hung, Kempen, & DeVries, 2010). An exploration of aspects of healthy aging with attention to a model for implementing recommendations would enhance the ability of educators and practitioners to facilitate healthy aging.

Empirical data suggests that, helping professionals often overlook the possibility that the most older adults have strong life coping skills from adaptation across a lifetime of stress (Alwin, 1994; Valliant, 1993). Many individuals over 65 have experienced wars, natural disaster, poor economic conditions, lower standards of living, and lack of available treatment as a part of their environment from the 1930s and 1940s. At the dawn of the research on aging adults, Valiant (1993) even suggested that older adults who have coped with more negative

events emerge into older adulthood with an increased ability to cope as compared with others. Aging brings new and unexpected developmental and environmental changes to play; which may require a return to or enhancement of previously used coping skill sets.

These older adults are much more likely to use medical care, than their younger counter parts, due to health concerns (Frank, McDaniel, Bray, & Heldring, 2004).Yet, by many reports, this demographic group is likely to underutilize services to assist in healthy aging and prevention efforts because of stigma that marks such help seeking as an indication of weakness (Shore, 1997; Snarksi et al, 2010). This avoidance of help seeking, for preventative services, is further exacerbated by the shortage of health care and mental health care providers specializing in Geriatric clients (Panchana, Emery, Konnert, Woodhead, & Edelstein, 2010; Perry and Boccaaccini, 2009; Qualls, Segal, Norman, Niederche, & Gallagher-Thompson, 2002). Of serious concern is the lack of focus, by health care providers, on prevention and early intervention for this age group (Rowan, Gillette, Yankeelov, Borders, Nicholas, & Wiegand, 2009). Especially given that researchers have estimated that roughly two-thirds of the variance in longevity is due to environmental factors that are within one's control (Ljungquist et al., 1998). The purpose of the current article is to analyze the existing data, using a biopsychosocial approach, to explore preventative and early intervention efforts to enhance healthy aging and to provide models to facilitate application of the findings.

2. Healthy Diet

Diet plays a substantial role in positive aging. The association between diet and healthy aging has been examined in comparative studies, where animals were placed on healthy diet regimens and compared to control groups with no restrictions. The results of comparative studies consistently indicate a strong relationship between longevity and caloric restriction, in a variety of animals, from protozoa to monkeys (Masoro, 2002; Weindruch, 1996). Some research has even suggested that healthy diet and dietary restrictions are a preventative factor related to the effects of Alzheimer's disease, Parkinson's disease and Cancer (Solfrizzi, Panza, Frisardi, Seripe, Logreoscino, Imbimbo, & Pilotto, 2011; Uranga, Bruce-Keller, Morrison, Fernandez-Kim, Ebenezer, Zhang, Dasuri, & Keller, 2010). These positive prophylactic longevity enhancing benefits of calorie restriction are due to its ability to reduce oxidative damage produced by the synthesis of free radicals as a normal metabolic function, resulting in cellular damage and mutations in the DNA, ultimately leading to disease and premature death (Qiu, Brown, Hirschey, Verdin, & Chen, 2010).

A healthy body weight calculated according to current Body Mass Index (BMI) tables; between 18.5 and 24.9, is considered normal and healthy (Foos, 2001). Both low and high BMIs are considered risky for older adults. A BMI of less than 20 has been associated with an increased risk of death, especially related to pneumonia (Adams et al., 2006; Jee et al., 2006). A very low BMI may also indicate malnutrition and may also suggest anorexia or bulimia. High BMIs in both males and females of all ethnic groups are associated with earlier mortality rates (Wray et al., 2005). A high BMI (over 30), which may just be one part of an overall lifestyle that includes lack of exercise, is associated with a 2-3 times increase in risk of early death, particularly from heart attack, stroke, and diabetes (Adams et al., 2006; Jee et al., 2006). Other evidence shows that even being overweight, rather than obese (BMI of 25-29.9) results in a 40 percent increase in the risk of early death (Adams et al. 2006). In fact, one study of healthy aging, 2000 men were followed for over three decades. Those with below-average caloric intake and healthy BMI had the lowest risk of death over this time period (Wilcox et al., 2004).

But it isn't just the quantity that counts—poor quality of diet is unhealthy too. Intake of recommended vitamins has been linked to longevity (Milgram et al., 2002). A non-nutritious diet can accelerate physical decline. One study on diet and physical decline in a thousand older adults, found that low intake of vitamins C, D, E, and protein were strongly correlated with accelerated physical decline (Bartali et al., 2006). Other studies have focused on vitamin E and found that it decelerates the pace of aging and cognitive decline (Morris et al., 2006).

Caution should be taken when exploring dietary supplements to enhance older adult functioning. Focus on supplements with empirical evidence to support use is advisable. Aspirin, as a daily supplement, has been shown to be effective in reducing the risk of cardiovascular accidents (Raju, Sobieraj-Teague, Hirsh, O'Donnell, Eikelboom, 2011; Ansara, Nisly, Arif, Koehler, Nordmeyer, 2010). One dose of 325-mg aspirin daily can cut the risk of heart attack in half (Mahoney & Restak, 1998). Another diet supplement for healthy aging is green tea. In an examination of over 40,000 older Japanese participants; researchers found that the mortality, in general, but particularly from cardiovascular disease, but not cancer, was lower for those who consumed at least one cup every day (Kuriyama et al., 2006). Other work shows the benefits of reservitol, in red wine, which is involved in the expression of a gene that repairs mutated DNA. Reservitol consumption allowed rodents to live 70% longer than control mice in one experiment (Baur et al., 2006).

Balance seems to be a key to a healthy diet supporting longevity and a common sense diet approach indicates that high levels of refined sugar and high fructose corn syrup, which is associated with high BMI and tooth decay, is not healthy. However, it may be unwise to forgo sweets altogether. Chocolate, particularly dark chocolate, may also be beneficial (Langer, Marshall, Day, & Morgan, 2011). Chocolate contains flavonoids that stimulate antioxidants reducing the risk of heart attack and stroke (Becker et al., 2006). In one large study investigating the effects of sweets on long term health, Lee and Paffenbarger (1998) examined candy eating and other lifestyle variables in over 7000subjects. Candy consumers lived almost a year longer than candy abstainers (Lee & Paffenbarger, 1998), even when physical exercise was controlled.

Building a healthy diet based on calorie restriction, appropriate nutrient intake, and balance may benefit older adults. This aspect of healthy aging should not be ignored by individuals working with older adults. Understanding the key role that diet plays in healthy aging cannot be underestimated and geriatric care providers would do well to focus on this preventative effort.

3. Physical Exercise

An abundance of research demonstrates the many benefits of physical fitness, indicating that regular exercise slows the physiological process of aging (Aldwin & Gilmer, 2004; Barrientos, Frank, Crysdale, Chapman, Ahrendsen, Day, Campeau, Watkins, Patterson, & Maier, 2011). Most of the data explains the health benefits, of exercise, in terms of lower levels of oxidative damage and a reduction of free radicals, both related to shortened life span (Faulks et al., 2006). Aerobic exercise increases blood flow and resistance exercise strengthens muscles and bones. An overall improvement in the functioning of the heart lowers the blood pressure and increases oxygen use efficiency (Gavin et al. 2011; Gunn, Smith, McKelvie, & Arthur, 2006). Both aerobic and resistance exercise are essential for healthy aging and especially for avoiding hypokinesia, the decline of muscle and bone mass; which is a significant factor contributing to physiological decline. Both types of exercise are related to reduce risk of cancer, diabetes, and osteoporosis. There are also psychological benefits which include lower stress and better moods (Gunn, Smith, McKelvie, & Arthur, 2006; Keese, Farinatti, Pescatello, & Monteiro, 2011). Regular exercise may also reduce anxiety and depression and increase cognitive activity (Colcombe & Kramer, 2003).

Many studies have looked at the benefits of certain exercise programs on specific benefits for older adults. In one large 8-year study, the death rate largely from heart disease and cancer, in the least-fit group was more than twicethe rate compared with the most-fit group (Blair et al., 1989). Another study revealed increases in oxygen consumption, muscle strength, flexibility, endurance, and coordination for those who exercised at least three times a week for only 4 to 6 months (Lazowski et al., 1999). Ferrarra, et al. (2006) focused on diabetes and found that exercise improves the metabolism of glucose in older men who were overweight, reducing the risk of diabetes and cardiovascular diseases. In another study, which focused on nursing home residents, the participants were assigned to either exercise groups for 10 weeks: high-intensity, low-moderate intensity, or no exercise groups (Seynnes et al., 2004). By the end, participants in both experimental groups spent more time standing, walking, and using the stairs.

Some researchers go so far as to claim that much of senescence appears to come with a failure to continue to use the body in effective ways (Gavin et al., 2011; Gunn et al., 2011). "Use it or lose it" depicts the mentality that researchers, exploring aging processes, have developed. Like diet, integrating preventative efforts in this area are crucial to the positive experience of aging.

4. Environmental Considerations

The area of psychology devoted to the environment as intervention for the older adult is referred to as environmental gerontology and has been a focus of gerontological literature since the early 70s (Wahl, 2001). Multiple models address the adaptation of the older adult to changing and new environments and focus largely on the importance of understanding individual needs and matching the environment to meet the specific needs. More recent authors have even suggested that an that is community oriented, diverse, and offers enhanced services is important to healthy aging as the ability to meet individual needs increases (Ejogu, Norbeck, Mason, Cromwell, Zonderman, & Evans, 2011; Saarloos, Alfonso, Giles-Corti, Middleton, & Almeida, 2011). Environmental changes beyond the control of the older adult (e.g., crime increases in a neighborhood or fear in the hospital setting) have been found to increase the tendency to isolate and reduce the activity level of older adults (Thompson & Krause 1998).

The living area is considered the "home space" of the individual and as developmental needs change, this environment warrants continued attention (Sixsmith & Sixsmith, 1991; Wahl, 2001). Wahl's (2001) review of the literature suggests that the adapted home environment may be crucial to the aging adult's ability to respond to

other prevention and intervention efforts. Older adults who are more comfortable in their "home space" are more likely to participate in healthy living strategies. Maintaining the home environment and adapting the home or institutional area to meet the needs of older adults may also be crucial to maintaining their independence (Oswald, Wahl & Gang, 1999). Creating security and safety, while focusing on changes needed for adaptation, is a balancing act that can be difficult for practitioners inexperienced in providing interventions for older adults. "Place Attachment" is an aspect of growing older that is much more important for older adults than for their younger counterparts (Rubinstein & Parmelee, 1992; Wahl, 2001). Creating a living space with feelings of "home attachment" promote feelings of safety and security. Positive subjective feelings about the "home space" seem to be good predictors of satisfaction for older adults regardless of their level of physical well-being (Christianson, Carp, Cranz, & Whiley, 1992).

One extensive study by Gill, Robinson, Williams, and Tinetti (1999) examined the home environment of over 1000 adults over 70 and found that home hazards (e.g., obstructed pathways) are prevalent for both impaired and non-impaired older adults suggesting that older adults may benefit from educational interventions related to creating safe space in the home. Wahl (2001) indicates that older adults may find needed changes to the home environment prohibitive related to information available, others in the home objecting, and cost of changes needed. Creating and sustaining a positive and helpful "home space" may require family education and exploration of social services resources.

5. Substance Use

Tobacco use is the leading cause of premature preventable death in America (American Cancer Society, 2011). Smoking is closely linked to cancer of the lungs, mouth, larynx, kidneys, pancreas, and cervix; it is also strongly associated with emphysema and heart disease (American Cancer Society, 2011). Nicotine is a powerfully addictive drug that raises the blood pressure; smoke particles and tar produce respiratory problems and tar is a known carcinogen. Carbon monoxide and cyanide are additional toxins that interfere with red blood cell functioning by blocking the transportation of oxygen to body. Cigarette smoking is also strongly linked with shortened telomeres, a region of repetitive DNA sequencing that protects chromosomes from deteriorating (Valdes et al., 2005). Fortunately, smoking cessation produces almost immediate improvements in oxygen delivery and blood circulation. The risks of heart attack and stroke also subsides within a year of cessation and the likelihood of cancer returns to normal levels after 10 years (National Institute on Aging, 1993).

For older adults motivated to quit using nicotine, a biopsychosocial approach is most effective. Nicotine replacement therapy, combined with social support and counseling yields the highest abstinence rates (Katz et al., 2011). In one study involving 165 older adults seeking smoking cessation therapy, 20% were abstinent for six months post-intervention, compared with 0% for the control group (Tait et al., 2007). Some factors increased the probability of successfully quitting: being male, having high anxiety, and reporting reduce illness by not smoking. Interestingly, older adults with greater health problems and psychological distress are more likely to be successful at stopping smoking suggesting that referrals from health care professionals related to health problems can motivate older adults to quit (Katz et al., 2011; Sachs-Ericsson, et al., 2009). For example, community nurses have successfully intervened and increase smoking abstinence (Rowa-Dewar & Ritchie, 2010).

Moderate consumption of alcoholic beverages, however, seems to be beneficial. Those who drink moderately are usually healthier and live longer than those who drink excessively or those that abstain completely. Studies have consistently found moderate consumption to be positively correlated with longevity (Stampfer et al., 2005), negatively correlated with cholesterol (Doll & Peto, 1994), and negatively correlated with heart attack or stroke (Doll, 1997). One recent study of alcohol use in older adults found that moderate use compared to no use was associated with fewer cognitive deficits throughout the two-year study (Stampfer et al., 2005). These benefits appear to be due to the blood thinning properties of alcohol, which reduces the risk of heart attack and stroke, similar to aspirin.

However, research also suggests that older adults have a significant incidence of SUDS. Substanceuse disorders (SUDS) are associated with early death from liver damage and disease (Cirrhosis), accidents, and a heightened risk for suicide. Excess use is associated with physical, cognitive, and emotional impairments (Perreira, 2002). One study yielded a 35% incidence rate, of alcohol abuse, among older adults (Barnes et al., 2010). Among these substance abusers, over 60% exhibited high risk alcohol behaviors that could threaten mortality. Those with lower education had the highest incidence of high-risk alcohol use. Other risk factors for older adults include having more friends who drink heavily and drinking for stress reduction. Interestingly, Moos, Schutte, Brennan, & Moos (2010), found that wealthier individuals were more likely to exhibit significant alcohol problems. These epidemiological data should help physicians and mental health care provider identify and educate at-risk

individuals.

Twelve Step groups and other recovery support groups are available for adults who are motivated to limit their intake and empirical support for the overall efficacy of these groups exists in reduction of alcohol consumption. However, little research actually explores appropriate substance use prevention and intervention efforts with older adults. One randomized-controlled study, with older adults, does advocate for cognitive-behavioral SUD treatment as a useful way to reduce high-risk drinking, although less useful for total abstinence as a goal (Moore et al., 2011). SUD prevention is an area of concern, in this population, that warrants further understanding and research related to prevention and intervention.

6. Mental Health

It is estimated that almost 20% of older adults experience some mental problems that are diagnosable and others struggle with less severe mental health changes (Rowan, Gillette, Yankeelov, Borders, Nicholas, & Wiegand, 2009). Unutzer, Patrick, Simon, Grembowske, Walker, Rutter, and Katon (1997) indicate that older patients with mental health issues tend to wait until problems effect physical health, or an accident occurs, to seek help and then help is often sought from medical professional. To complicate the issue, comorbidity of mental health issues and physical issues, in older adults, patients is quite common (Unutzer et al, 1997; Whitbourne, 2010). Leventhal, Rabin, Leventhal, and Burns (2001) even suggest that the psychological problems associated with physical problems "feed forward" and actually contribute to expeditious increases in physical decline. Avoidant help seeking, isolative tendencies and social ageism may contribute to heightened risk for depression onset of escalation in older adults. The interaction between Geropsychiatric mental health issues and health issues is interwoven and complicated. Ferguson and Koder (1998) strongly assert that preventative psychological interventions could be effective including, adjustment to chronic illness, pain management, treatment of sleep disturbance, grief and loss support, support for caregivers, and retirement counseling.

The two most commonly reported psychological problems in older adulthood are depression and anxiety (Baker, 1996; Frank, et al, 2004). Depression is often noted by physicians as older patients are forced to cope with impairment onset in later years of life (Benyamini, Idler, Leventhal, & Leventhal, 2000; Leventhal et al, 2001). Of note, impairment in cognitive functioning is common in depressed and anxious older adults and can mimic dementia making this group especially difficult to treat (Alexopoulos, Raue, & Arean, 2003; Nebes, Butters, & Mulsant, 2000). By most reports (i.e., Paukert, Phillips, Cully, Loboprabhu, Lomax & Stanely, 2009) guidance and brief psychotherapy can be effective in treating these problems in older adults with preventative training in cognitive and behavioral models effective for many. For example, Scogin and McElreath (1994) reviewed outcome studies on mild depression in older adults and found the older adults respond to psychotherapy at rates comparable to their younger counter parts. Practitioners have also consistently found that short-term family oriented prevention and intervention efforts with older adults can reduce mild depression and anxiety (Knight, 1996; Shileds, King, & Wynne, 1995). Additionally, older adult males have suicide rates, above many other younger groups, related to isolation and end of life concerns (Fung & Chan, 2011; Hoyert, Kochanke & Murphey, 1999). Suicide prevention research and programming for this population is a necessary focus for researchers and practitioners.

Minimal research addresses primary prevention efforts in geriatric psychiatry and psychology. Madusoodanan, Ibrahim, and Malik (2010) reviewed the English literature and found that behavioral psychosocial efforts were most positive in prevention of depressive symptoms and suicide prevention. These authors indicate that focuses on modification of behaviors that create risk (e.g., diet, exercise, social support, and education) are most beneficial in prevention of psychological problems. However, it is important to understand the extent of problems in older adults, who come with a wide variety of cognitive, physical, emotional issues, and to consider the individual developing in later years within a larger psychosocial and context; and increase the focus in research in this area of geropsychology when developing prevention efforts. Certainly this is also an area for future research efforts.

7. Activity and Mental Health

Overall, the research strongly indicates that keeping older adults active and engaged in life activities seems essential not only to physical wellness, but for psychological well-being too (Rowan, Gillette, Yankeelov, Borders, Nicholas, & Wiegand, 2009). Behavior activation (BA) is a preventative intervention that has empirical support with younger individuals (Dimidjan, Dobson, Kohlenberg, Gallop, Markey, & Atkins, 2006; Hopko, Lejuez, Lapage, Hopklo, & McNeil, 2003) and modest support for older adults (Martell, Addis, & Jacobson, 2001). This strategy to increase activity levels, in small, planned, and individualized efforts, adds to the current research focus on activity regardless of level of impairment (Hanneman, 2006; Nystrom & Lauritzen, 2005;

Yassuda & Nunes, 2009). Motivala, Sollers, Thayer, and Irwin (2006) have even found that music and hobby focused activities can enhance nervous system functioning and assist in combating agitation for individuals who resist physical activity.

Case Studies (e.g., McGuire, 1997) have indicated that activities, such as horticultural, are beneficial in increasing socialization, stimulating cognitive activity, and increasing physical activity for older adults. Inherent in horticulture therapy, found to be successful in reengaging older adults, are activities such as arranging flowers, planning a small garden, and sending flowers to others in a structured format that includes verbal interaction, sensory stimulation, and positive reinforcement for increasing activity and social interaction.

Music, with activity, has also been used successfully in enhancing later life satisfaction; in palliative care, in hospital settings, in community centers, in religious settings, and nursing homes in efforts to reduce pain perception, enhance positive affect, and increase coping skills Ledger & Baker, 2007; Myskja & Nord, 2008). With the use of music, the individual can be stimulated or calmed as dictated by personal needs and preferences (Yassuda & Nunes, 2009). Listening and reacting physically to music is one of a few activities also effective across culture. Chan, Chan, Mok, and Tse (2009) found decreases in blood pressure and in depression scores in a sample of Chinese elderly. When music is paired with dance; researchers have found beneficial effects to balance and gait in healthy older adults (Hackney, Kantorovich, & Gammon, 2007). Although the research on music, as a preventative measure is somewhat sparse, research can be a guide for appropriate loudness and functional singing range for older adults (Hintz, 2000). Individualizing and strategizing to incorporate music into healthy aging that takes personal preferences into consideration is an important aspect of using this method in preemptive efforts.

Artistic activities can facilitate relationship building, expression of end of life experiences, and enhance cognitive activity (Kates, 2008). In addition, art activities, as a preventative measure and as an intervention effort, are considered safe and helpful strategies for working with older adults (Kates, 2008; Shore, 1997). Facilitating artistic activities for older adults presents special problems related to time to complete activities, ability level, feelings of inadequacy in the activity, and controversy about the ability of older adults to sublimate through art (Shore, 1997). As such, special problems younger family members and helping professionals face, in facilitating art for this population, include the tendency to want to take over the creative process or to minimize performance. Educating involved parties to the unique abilities of art to improve motor functioning, stimulate activity, and enhance social interaction (as well as to stimulate creative activity) can enhance the use of this activity strategy.

Interacting and caring for a pet, has also been found to enhance the later life experience (Harris & Gellin, 1992; Katcher, Friedman, Zisselman, Rovner, Shmuely, Ferrie, 1996). Successful pet interactions include verbalized reminisce of childhood beloved pets, contact and caretaking of pets, and interaction with others involved in the caretaking of the animals (Zisselman et al., 1996). These activities address psychosocial needs of the older adult as well as providing companionship and a sense of purpose. The plethora of research in this area is in need of updating and replication in preventative efforts to substantiate use.

8. Spirituality in Older Adulthood

Recently, a large body of literature has arisen suggesting that spiritual needs of older individuals are also important (Puchalski, Ferrell, Virani, Otis-Green, Baird, Bull, et al., 2009). Older adults facing illness and death often turn to spirituality to cope and research has suggests that this is beneficial (Krause, 2003; Kirbey, Coleman, & Daley, 2004). Spirituality is reported as very important by over half of older adults (Chen, Cheal, & Herr, 2007; Newport, 2006). Older adults may look to religious communities to sustain independent living and to help with facing end of life issues (Wink & Dillon, 2002). Most research suggests that spirituality can effectively benefit the lives of older adults (Koenig, 2001; Paukert et al, 2009). This positive effect is most likely to occur when decisions to use spiritual activities are desired by the older adult, without challenging existing beliefs. One study (Mayers, Leavey, & Vallianatour, 2007) actually found that cognitive behavioral therapy that incorporated religion was most effective when used by non-religious helping professionals.

Monod, Rochat, Bula, and Spencer (2010) suggest that spirituality in older adulthood should be addressed differently than in middle age. These authors developed a Spiritual Needs model based on developmental needs of older adults; balance, connection, values, personal control, and maintenance of identity. Recognizing the importance of spirituality can help professional and family caregivers enrich the lives they touch.

9. Cognitive Strategies

The use of cognitive strategies to improve the quality of life of older individuals with normal aging issues is relatively new and usually focused on maintenance of a positive mood (Kasl-Godley, & Gatz, 2000). Prevention

efforts focusing on building thought patterns that motivate activity to fend off lethargy, anhedonia, and social isolation were developed by Jacobsen and colleagues (1996) and modified into simple applicable terms for geriatric settings by Leguez, Hopko and Hopko (2001). Cognitive strategies have been used successfully with older adults to increase feelings of satisfaction and pleasure in daily life activities leading to fewer symptoms of depression (Teri, Logsdon, Uomoto, & McCurry, 1997). Functional analysis is another strategy used by clinicians and heavily based in behavioral theory that can be adapted and taught to higher functioning older adults. This prevention and intervention effort focuses on mapping out basic life activities, and thinking patterns related to these activities, noting simple stimulus response relationships in order to build successful plans for behavior modification (Hayes, Wilson, Gifford, Folette, & Strosahl, 1996).

10. Recommendations and Conclusion

In application, of recommended preventative directions, it is crucial for the practitioner and facilitator of preventative medicine to utilize strong models to guide and direct their work. The following models are models of prevention and intervention that give direction and the ability to plan appropriate preventative strategies for the older adult.

Lehr's (1977, p. 7) important description of geroprohylaxis, in outlining intervention directions appropriate in geropsychology, provides a foundation for describing various prevention and intervention strategies for enhancing the aging experience. Lehr suggests that the main focus of geropsychological interventions should:

1) Educate the older adults to a healthy lifestyle based on current intrinsic and extrinsic resources

- 2) Focus on the management of current stressors
- 3) Focus on adequate exercise and appropriate diet
- 4) Assist in maintaining autonomy
- 5) Address prevention of disease

Leer's model remains important forty years later; and the dearth of research reviewed herein continues to support this basic model of healthy strategies to enhance life into the later years.

Another model by Baltes (1997) organizes the important focus of selective optimization with compensation. The key to preventative and intervention efforts, in this model, is to clearly outline the individual limitations and seek to enrich and augment reserves optimizing the quality of life for the aging adult. Baltes also recognizes the importance in using new resources and external aid to address these limits placed on the individual through the aging process. Wagner's (1998) Chronic Care Model (CCM) has been used widely and has sturdy empirical support. The model predicts that improvement in the interrelated areas of self-management support, clinical system redesign, and decision support activates individuals to be prepared and proactively address health and mental health issues in older adulthood.

Leventhal et al's (2001) model, of "Self-Regulation" as intervention, for the elderly suggests that any model of effective intervention includes:

- 1) Increasing motivation and decreasing barriers to intervention
- 2) A plan for change that matches current life situation
- 3) Evidence that other adults improve functioning based on the planned interventions
- 4) Addressing environmental supports and barriers to intervention

Professional training for geropsychological settings is unique in its focus as often services are delivered in residential care settings. The need exists to train mental health professionals in team and interdisciplinary strategies that are effective with service delivery to this population (Bodenheimer, Wagner, & Grumbach, 2002).

An increase in life expectancy is permitting older adults to live longer—and healthier longer. This is creating a situation which stands to be a heavy burden on health care cost and economy, placing a great importance on prevention and intervention efforts for this developmental cohort. However, research points to the use of preventative strategies and their significant impact on healthy aging. By using models of prevention that address key issues of healthy aging and motivating older adults to practice healthy habits while utilizing previously learned coping skills the older adult can decrease the negative changes associated with aging. Healthy diet, regular exercise, and moderating substance use are healthy habits for older adults, just like for their younger counterparts. In addition, learning about the importance of maintaining mental and physical health, employing already in place coping skills, and learning new strategies for life's changes are important to healthy aging. In addition, maintaining social support through family, friends, and spiritual organizations facilitate increased and

more productive longevity.

Traditionally, physical and psychological ailments are defined differently and are usually treated by a distinct set of professional health care providers. However, this research suggests that a healthy body and mind are both especially important for one's physical well-being. Thus, it is important to provide an impetus for the integration of psychological and physical health care that fosters a healthy lifestyle.

This suggested integrative approach to prevention efforts with older adults relies heavily on the assumption of more in depth and cross-disciplinary research and practice. Several areas of further research are suggested including prevention research further supporting the use of physical, mental, and spiritual prevention efforts for aging adults. The need for this research and application in the field will enable the "greying of America" to stand on positive and empirically supportive prevention efforts long into the future.

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