

Reassessing Statin Therapy in Elderly Dyslipidemia: A Literature Review

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Purpose: An integrative literature review was done to identify the best interventions for older adults with dyslipidemia in an effort to promote nursing involvement in the prevention of statin-induced symptoms (SIS). Such awareness could increase the capacity of interventions by geriatric nurses using evidence-based practices in the reassessment of statin therapy. **Methods:** CINAHL, Pubmed, and ProQuest were searched using these terms: dyslipidemia in, elderly, statins, adverse effects, and quality of life. Eleven articles fitting the inclusion criteria were identified and analyzed. **Results:** The findings indicate no evidence for the benefit of statin therapy for morbidity/mortality in a high-risk primary prevention set-up, specifically in the elderly population. Although SIS prevails among older adults, there are limited data that confidently support this observation along with nursing interventions specifically for the geriatric nursing community. **Conclusion:** Future research is necessary to shift nursing intervention with statin users (specifically in older adults) from an illness-based intervention to a preventive care plan to provide optimal care based on evidence. It is essential to involve self-reporting, cooperation, and communication with health care professionals, specifically with geriatric nurses. Additional studies are needed to further direct practice interventions in elderly statin users.

Key Words: Dyslipidemia, Elderly, Statins, Adverse effects, Quality of life

INTRODUCTION

Dyslipidemia is a well known modifiable risk factor for cardiovascular disease (CVD). Over the last two decades, an awareness has grown among health care professionals about the importance of lowering serum lipid concentration. CVD is very familiar among older people and will continue to grow in occurrence as the elderly population expands. As a result of the remarkable transition from a state of high to low birth and death rates, the elderly are the most quickly increasing subdivision of the general public around the globe, unprecedented in human history (United Nations, 2006). With aging, the risk factor for adverse drug reactions increases because of alterations in pharmacokinetics, tissue sensitivity, and the increased prevalence of diseases (Planton & Edlund, 2009). Thus, the incidence of

statin-induced symptoms (SIS) is significantly increased within this vulnerable population. Given this context, an organized therapeutic plan and a critical evaluation of statin therapy for the elderly are necessary to help establish a safe and effective care. However, there is still skepticism among certain clinicians and investigators as to the actual potency of using of statins with frail or near-frail older adults (i.e., aged 65 and older). Even with the general view that statins do more good than harm, the importance of carefully considering the risk of statin use for the elderly is under-researched, specifically in the nursing community. The policy recommendations on dyslipidemia, the National Cholesterol Education Program (NCEP)/Adult Treatment Panel (ATP) III (2002) presents a set of clinical practice guidelines for the primary prevention of dyslipidemia, aimed at preventing new onset CHD or CVD. However, guidelines are not specifically presented for the elderly pop-

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투고일 2011년 10월 27일 / 심사완료일 2011년 11월 24일 / 게재확정일 2011년 11월 28일

ulation, which simply suggests that older adults can also benefit from lipid-lowering therapy. Despite the growing body of literature investigating statin-related side effects, little is known in the nursing community about the most effective means of diagnosing and caring for elderly patients who use statins. Meanwhile, nurses play an important role in the recognition and management of dyslipidemia in elderly statin users. Therefore, the purpose of this review was to explore the most recent studies regarding SIS, cholesterol level and mortality, and quality of life in the elderly with dyslipidemia, and subsequently to discuss effective nursing interventions for use with elderly patients reflecting the current consensus of knowledge of dyslipidemia with statin use and attitudes toward care for elderly patients.

METHODS

The literature was collected through a systematic search of the Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, and ProQuest electronic database using the key words, dyslipidemia, elderly, statins, adverse effects, quality of life. Articles were chosen without respect to any specific diagnosis. Additional articles were obtained through a search of pertinent references in the identified articles. Of more than 149 articles in the original dataset, most were excluded through a review of titles and abstracts. Only original longitudinal research studies or systematic reviews compromised to this review. The inclusion criteria required the articles to be: 1) written in English

from peer-reviewed journals, 2) published between 1996 and 2011; and 3) focused on older adults. Exclusionary criteria were used to screen out commentaries, opinions, and editorials. Studies offering information exclusively on the benefit of statins were excluded. Eleven articles met the criteria and were selected for review. These are presented in Figure 1 and Table 1.

RESULTS

Eleven articles met the review process criteria. Despite the prevailing sentiment about SIS among older adults, definitive answers to the review question remain elusive because only limited data confidently supports these observations within the nursing community. Six of the eleven articles focused on the elderly population. Five studies examined statin-induced symptoms (adverse reactions to statins), while three explored the quality of life with dyslipidemia. The rest of three papers investigated the relationship between low cholesterol levels and morbidity/mortality. These major results are presented in Table 2.

A. Statin-Induced Symptoms (SIS)

Davidson and Reddy (1996) investigated the possibility of increases in depressive symptoms among patients who have undergone cholesterol-lowering intervention with statins and fibrates. They reported that patients had a significant increase in depressive symptomatology from nonclinical ranges pretreatment (i.e., before cholesterol-lowering intervention) into

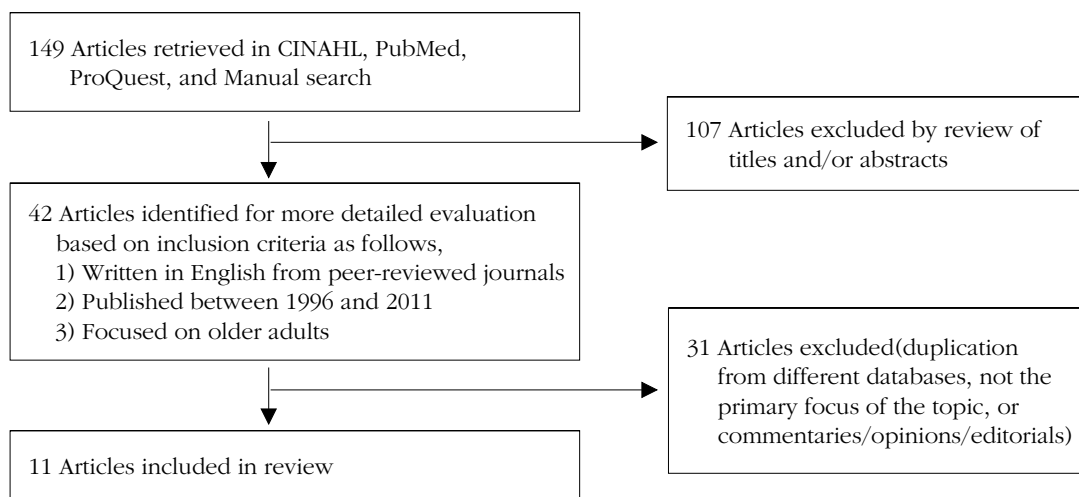


Figure 1. Selection of the articles for the review.

Table 1. Summary of Research Studies included in Review

Author	Research purpose	Study design, sample size, setting	Findings
Bresianni et al. (2003)	To analyze the relationship between serum total cholesterol and all cause mortality, taking into account various potential confounders	Population-based prospective cohort study older adults (n=4,521) residing in the general community in Italy	Low total cholesterol was associated with a higher risk of death, regard very low levels of cholesterol as potential warning signs of declining health
Davidson & Reddy (1996)	To investigate the possibility that increase in depressive symptoms in patients who have taken Statins and fibrates	Depression scale used as a standard measure of depressive symptoms before and after statins and fibrates therapy (n=6)	Although cholesterol levels reduced after the intervention, depressive symptomatology score increased
Fernandez et al. (2008)	To investigate the relationship between statins and interstitial lung disease (ILD)	A systemic review of the literature and of Food and Drug Administration (FDA) adverse statin-induced event reports (AER)	The FDA-AER system database contained 162 cases of reported statin-induced ILD, for every 10,000 reports of a statin-associated adverse events, 1 to 40 reports were for ILD
Hyttien et al. (2008)	To analyze the health-related quality of life (HRQoL) of elderly patients with familial hypercholesterolemia (FH)	Survey research using questionnaires, interview, clinical exam of FH patients, aged 65 and over (n=37) in Finland	Despite the clear cardiovascular morbidity, the subjects enjoyed a similar HRQoL as the control group
Lantuejoul et al. (2002)	To investigate statin induced hypersensitivity pneumonitis by histological analysis	Case report of statin-induced lung disease	Ultrastructural analysis showed cytoplasm of pneumocytes, macrophages and endothelial cells suggesting might account for statin lung injury
Leon-Munoz et al. (2009)	To determine the prevalence of self-reported adherence of older people with hypercholesterolemia to nonpharmacological treatment	Population based prospective study (n=4,008) home interview and physical examination at baseline	Most (83.8%) persons with known hypercholesterolemia reported adherence to at least one nonpharmacological measures, 29.5% adhered to three measures; control weight, reduced fat intake, increasing physical activity
Mashayekhi et al. (2011)	To study the prevalence of side effects of statins among patients admitted to a cardiac-specialized hospital and had taken statins prior to hospitalization	A questionnaire completed using the patients' records and by interviewing the patients, mean age 61.5 (n=200) years in Iran	63.5% of the participants reported experiencing side effects of statins
Ray et al. (2010)	To determine if statin therapy reduces all- cause mortality among intermediate to high risk patients without a history of cardiovascular disease	A meta-analysis of published clinical trials (n=65,229)	Study did not find evidence for the benefit of statin therapy on all- cause mortality in a high risk primary prevention set-up

Table 1. Summary of Research Studies included in Review (Continued)

Author	Research purpose	Study design, sample size, setting	Findings
Rodine et al. (2010)	To determine prevention strategies statin-induced myopathy (SIM) with two -cases in which patients presented to a chiropractic setting	Case studies using focus chiropractic setting of a sample of patients in managing hypercholesterolemia with statins	Myopathic symptoms represent the most commonly experienced side effects
Scott et al. (2009)	To describe differences between statin users and non-users in muscle mass, muscle function, and falls risk in a group of community-dwelling older adults	A prospective, population-based cohort study (n=774) with a mean follow-up of 2.6 years	Statin use at baseline predicted increased falls risk scores over 2.6 years and demonstrated decreased leg strength compared to controls
Tikhonoff (2005)	To investigate the role of low density lipoprotein cholesterol (LDL-C) as a predictor of mortality in elderly	Population-based prospective cohort study (n=3,120), two communities in Northern Italy	The association between stroke mortality and LDL-C was not significant: The uncertainty of the role of elevated of LDL-C as a risk factor for mortality in older people

Table 2. Three Major Results in Review

Statin induced symptoms	Low cholesterol level and morbidity/mortality	Measurement of quality of life
Davidson & Reddy, 1996; Fernandez et al., 2008; Lantuejoul et al., 2002; Mashayekhi et al., 2011; Rodine et al., 2010	Brescianini et al., 2003; Ray et al., 2010; Tikhonoff et al., 2005	Hyttien et al., 2008; Leo-Munoz et al., 2009; Scott et al., 2009

distress ranges post-treatment ($p < 0.01$). The article suggested that further study of possible links among low cholesterol, depressive symptoms, and serotonergic activity is necessary. Lantuejoul, Brambilla, Brambilla, and Devouassoux (2002) reported that a statin-induced diffused interstitial pneumonia associated with a non-specific interstitial pneumonia pattern at histological analysis, suggesting a shared pathogenesis with amphiphilic drug-induced toxic lung injury. The authors argued that statin-induced interstitial lung disorders (ILD) may be more frequently observed, and that early recognition will be required as statins are increasingly prescribed. Fernandez, Karas, Alsheikj-Ali, and Tompson (2008) reinforced this hypothesis about statin-induced ILD. They suggested that with statins and ILD (even though the exact mechanism is unknown), the potential toxic effect is mediated by the inhibition of phospholipases as part of the statin effect on lipid metabolism. This could produce phospholipid-rich intralysosomal lamella inclusions in type II pneumocytes

(the cell type normally producing surfactant), histiocytes, and endothelial cells, causing an amphiphilic drug-like toxic lung injury. The authors also noted the disruption of oxygen consumption a mitochondrial function may be impacted by the use of statins. The potential for statins to interfere with energy metabolism in the muscle mitochondria by disrupting the electron transport chain has been postulated as a potential explanation for statin-induced myopathy.

Further findings associated with statin use observed in chiropractic patients (statin-induced myopathy [SIM]) were published by Rodine, Tibbles, and Alikhan (2010). The study described the clinical manifestations of SIM as proximal muscle pain, weakness, myalgia, generalized aching, nocturnal cramping, diffuse or crampy pain and fatigue. Although the prevalence estimates of SIM were variable, symptoms developed within a median time of one month following statin therapy initiation. In this study, the authors indicated that the patient history and description of pain were

the most likely indicators of SIM being included in the differential diagnosis. A descriptive cross-sectional study by Mashayekhi, Ghandforoush-Sattari, Baghdadchi, and Kheyri (2011) also described the prevalence of SIS among patients admitted to a cardiac-specialized unit who had taken statins prior to their hospitalization. Research showed that 63.5% of the participants reported SIS: respiratory (4%), gastrointestinal effects (18.5%), headache (16.5%), myalgia (9.5%), and allergic reactions (5%).

B. Low cholesterol level and morbidity/mortality

Brescianini et al. (2003) analyzed the relationship between serum total cholesterol (TC) and all-cause mortality, reported in a longitudinal study among older adults that low TC is associated with a higher risk of death. The authors noted that subjects with low TC levels (<189 mg/dL) were at higher risk of dying even when many related factors were considered. They suggested that although more data are needed to clarify the association between TC and all-cause mortality in older individuals, clinicians should regard very low levels of cholesterol as potential warning signs of rapidly declining health. In contrast to certain previous findings, the authors questioned whether high cholesterol is linked with lower mortality. Tikhonoff et al. (2005) performed a population-based prospective cohort study to investigate the role of low-density lipoprotein cholesterol (LDL-C) as a predictor of mortality in elderly patients. The authors reported that the distribution of risk of total mortality in women and of fatal heart failure in all subjects was curvilinear, decreasing nonlinearly with LDL-C. The evidence with regard to the risk associated with total cholesterol or LDL-C in older adults was found to be uncertain. In other words, elevated levels of LDL-C as a risk factor for mortality in older adults was not found to be significant. Ray et al. (2010) concluded that an average statin therapy period of 3.7 years had no benefit on all-cause mortality in a high-risk primary prevention population. This finding suggested that all-cause mortality benefits are more unassuming in the short term, even among these specific populations, thereby indicating the need for further caution when extrapolating the potential benefits of statins on mortality among lower-risk primary prevention populations. The authors concluded that the use of statins was not associated with a statistically significant reduction (risk ratio, 0.91; 95% confidence interval, 0.83~1.01) in the risk of all-cause mortality. In other

words, they did not find evidence of statin therapy benefit related to all-cause mortality in a high-risk primary prevention set-up.

C. Measurement of quality of life (QOL) in elderly persons with dyslipidemia

Hyttinen, Vuorio, Sintonen, and Strandberg (2008) used an observational cohort approach to investigate the health-related quality of life (HRQoL) in elderly patients with familiar hypercholesterolemia (FH). Their findings confirmed that despite high risk of cardiovascular disease morbidity, the HRQoL for elderly survivors of FH was similar to that of the control group. The researchers also reported that lifelong hypercholesterolemia was not associated with poorer HRQoL in elderly survivors of FH. The authors noted that this patient group did not have the option of statin intervention until midlife, since statins weren't introduced until 1987. Furthermore, they concluded that despite the obvious cardiovascular morbidity indicated by cholesterol hypotheses, these FH patients enjoyed a similar HRQoL as the age-standardized controls in the general population. Scott, Blizzard, Fell, and Jones (2009) analyzed the differences between statin users and non-users in terms of muscle mass, muscle function and falls risk among a group of older adults, concluding that statin-induced myopathy (SIM) exacerbates the age-related decline of muscle function. Their longitudinal study found that statin use at the baseline predicted increased falls risk scores over 2.6 years (0.14, 95% CI 0.01~0.27) and a trend towards increased percentages of appendicular lean mass (ALM) (0.45%, 95% CI 0.01~0.92). Statin users at both time points demonstrated decreased leg strength and leg muscle quality (LMQ), and trended towards increased falls risk compared to the controls. The findings of this study indicated that statin use may exacerbate muscle performance declines and falls risk associated with aging without a related decrease in muscle mass.

Finally, Leon-Munoz, Guallar-Castillon, Graciani, Rodriguea-Artalejo, and Banegas (2009) observed that an adequate assessment of an older adult's management of dyslipidemia relies on the ability to adhere to nonpharmacological approaches. The authors determined that the participants who reported increasing their physical activity to control high cholesterol had lower mortality rates than those who did not ($p < .05$). Controlling weight was also associated with lower mortality ($p < .05$). Additionally, reduced fat intake lead to

lower mortality rates ($p < .05$). This association between adherence to nonpharmacological intervention with lower mortality (a substantial reduction (60%) in mortality) indicates the need for increased vigilance and prudence in planning care for the vulnerable elderly with dyslipidemia.

DISCUSSION

Across the reviewed studies, one main theme comes to the forefront; it is likely that some of the discrepancies among research outcomes and the 2004 NCEP guidelines result from a lack of evaluation of the cholesterol sequence and from biological changes during aging. An obvious global trend exists toward an increasingly aged population. Human life expectancy has doubled from approximately 40 to nearly 80 years since the beginning of the 20th century (Lu, 2005). Population aging is a global phenomenon and has increasingly become a health care challenge around the world. Chronic physical conditions such as dyslipidemia are becoming major issues for health care systems. Usually, health in older adults has been conceptualized from a medical standpoint and focused on the absence of disease and disease-related disability. However, the situation is more complex than the medical perspective suggests, defined not only as the avoidance of disease and disease-related disability but also as the maintenance of high cognitive and physical functioning. With this in mind, if the ultimate goal of managing elderly patients with dyslipidemia is to reduce the risk of developing CHD or CVD, the reports in question reveal concerns for geriatric nurses whose goal is to help patients live a high quality of life by maximizing their independence and maintaining welfare levels worthy of their dignity (Chung et al., 2008). In this context, it is necessary to seek methods of helping older adults to have independent lifestyles. The health status of older adults is an essential factor for maintaining an independent lifestyle. We pose the question, "Does statin therapy prevent or treat CHD or CVD in elderly persons?" To provide efficient and effective intervention, nurses should ascertain whether statin use in older adults is beneficial or is an unnecessary risk. As recognized, adverse drug effects are a cause of increased morbidity in the elderly (Oliver et al., 2009). Although lipid management is one of the targets for the patients with known CVD (Weiner, 2009) and statins are well known for effectively lowering LDL-C, the role of statin therapy for the prevention of

CVD remains controversial, specifically in older adults. Furthermore, statin therapy for lowering LDL-C levels can induce various adverse symptoms (Davidson & Reddy, 1996; Fernandez et al., 2008; Lantuejoul et al., 2002; Mashayekhi et al., 2011; Rodine et al., 2010;). Recent studies (De Jong et al., 2011; Preiss & Sattar, 2011) also augment the information on SIS. De Jong et al. (2011) reported that statins influence immune regulation which may potentially facilitate autoimmunity, resulting in autoimmune disease such as rheumatoid arthritis. Also, statin therapy is associated with an increased risk for developing diabetes (Preiss & Sattar, 2011). Despite extensive research documentation about statin therapy, few documents exist about its adverse effects on the management of dyslipidemia in older adults. Evidence-based practice creates a common ground of discussion for all nursing care. Thus, in this context, the goal of nursing interventions for elderly statin users is to encourage them to improve their quality of life while preventing statin-induced symptoms from worsening. Nursing education is a key component of geriatric care, particularly in the evaluation of dyslipidemia treatment with statins at the time of routine vital check ups. Predictable side effects associated with statins are myopathy and hepatotoxicity; thus, baseline liver transaminase levels should be obtained prior to beginning therapy (Kester, Vrana, Quraishi, & Karpa, 2007). If the NCEP/ATP III guidelines are intended to suggest the best care possible, their principal focus should be preventive maintenance through lifestyle interventions, specifically for elderly persons. Nonetheless, according to National Heart, Lung and Blood Institute, the guidelines' cholesterol goals were lowered in 2004 (LDL-C < 70 mg/dL) from the level established in 2002 (LDL-C < 100 mg/dL). Thus, the goals become more difficult to achieve, resulting in the tendency to prescribe larger doses of high-potency statins to attain the lowered goals. Clearly, the findings in this review indicate a gap between the proposed treatment goals for lowering LDL-C and mortality rate (Bresciaini et al., 2003; Ray et al., 2010; Tikhonoff et al., 2005). Study results require nurses to focus on applying the more ultimate nursing goal caring for the elderly because the correlation between mortality and cholesterol levels were not found to be significant, as noted in this review. With this notion in mind, more positive lifestyle interventions should be incorporated into the daily lives of the elderly with dyslipidemia prior to the initiation of statin use, nonpharmacotherapy in terms of exercise, diet, and weight control (Leon-

Munoz et al., 2009). As is well known, dyslipidemia is often related to lifestyle factors; therefore, it is clear that lifestyle habits and behavior modification strategies must be employed to minimize risk factors in order to control cholesterol and optimize cardiovascular health outcomes (Carrington et al., 2008). Nevertheless, if statins are initiated, the nurses practicing elderly care are ideally suited to correctly manage the prevention of SIS. Given the severity of SIS in elderly patients, the role of the geriatric nurses should be to refer the patient to a prescriber when SIS is suspected, and to perform a thorough nursing assessment and comprehensive examination in elderly patients presenting with musculoskeletal complaints. In specific, suspicion should be aroused if pain cannot be classified orthopedically or mechanically due to an increased falling risk with statin use (Scott et al., 2009). Statin-related adverse effects in the elderly often have severe consequences and may often become a condition leading to other serious health disorders. An assessment of strength changes in proximal musculature (such as the quadriceps or scapular stabilizers) could help detect the early onset of weakness in statin users and allow for prompt appropriate nursing intervention. Because nurses possess a unique skill set by which to identify adverse effects of statin use, it is important for them to identify detrimental functional changes and to refer patients to a prescriber. In elderly statin users, unexpected functional changes are an imperative in managing the potential SIS risks. If nursing assessment confirms statin-related adverse effects, a care plan should be devised as suitable for the patient's recovery from the side effects, as well as appropriate nursing intervention.

The practice of nursing is distinguished from other health-related disciplines in that it strives to care for the entire human being. The nursing profession works in collaboration with other allied professionals to improve the health care for the presenting patient and to improve the method of health care. Lifestyle issues in preventive geriatrics and emphasis on education related to health maintenance should be incorporated into and understanding of statin therapy's risks. Understanding these elements is accomplished by providing educational knowledge in a supportive background and by reinforcing the needs of the elderly patients by geriatric nurses. Thus dyslipidemia with statin use in elderly nursing education is a major component of patient care. Unfortunately, many geriatric nurses do not consider prevention care a necessary part of their practice, despite the fact that many of their elderly pa-

tients' complaints are associated with statins. Geriatric nurses are well positioned to help their patients understand the statin-induced symptoms such as myopathy which directly impact their quality of life. Special attention should be paid to older adults with risk factors for myopathy. Geriatric nurses should heed the signs and symptoms of the side effects of statins, such as weakness involving muscles not recently exercised or which fail to show signs of improvement even after several days of rest (Rodine et al., 2010). Patients should be educated regarding the signs and symptoms that may indicate an adverse effect of statin medication, such as unusual exertion in performing their daily activities or discoloration of their urine, indicating rapid muscle breakdown.

The prevention of SIS should be an important part of nursing care in all geriatric units if patients are treated with statins. It is natural to include drug-related education in basic nursing education, since nurses can continue to educate older adults about advances in research and treatment related to their chronic conditions, medications, to help the patients maintain their knowledge and to promote self-advocacy. Geriatric nurses may also ensure that elderly patients are appropriately treated and monitored, which can improve patient outcome.

Management of dyslipidemia in elderly patients has been aimed at lowering LDL-C; however, according to evidence-based practices in this literature review, therapy is now focused on preventing the adverse effects of statin use. In light of this perspective and with an improved understanding of dyslipidemia and the lipid hypothesis, it is important to appropriately manage this chronic condition to prevent or minimize progressive deterioration from the adverse effects of statins. This review highlights the important role that nurses can assume in the management of older statin users with dyslipidemia. Increased caution and discretion are needed in prescribing for the elderly in the first place. More and more, scientists are questioning the theories that cholesterol levels are related to morbidity/mortality (Bresciaini et al., 2003; Ray et al., 2010; Tiknonoff et al., 2005). The core concepts of caring for the elderly that result from this study argue that it should include professional nursing knowledge regarding statin use, which should be shared with the nursing community as well as with the larger health community. Geriatric nurses' abilities to care for elderly persons with dyslipidemia will be significantly improved if these considerations are added to nursing education.

However, there is no scientifically established data on nursing care and statin therapy at this time. Most of the existing studies include the identification of statin use and its effectiveness, provide information about statin benefits, and suggest and encourage statin use to reduce LDL-C levels. To bypass the promotional approach to statins, this review mainly used qualitative approaches to explore the meaning of the concept of caring for elderly statin users. Caring for the elderly is not only treating their disease, but also understanding them as elders and developing the concept of real caring, specifically when they are treated with statins. As a straightforward example, it should be considered that there is an increased risk of falling due to decreased muscle tone among statin users. It is possible that future studies will identify a more distinct pattern of occurrence and identify a degree of a causal relationship as more geriatric nurses participate in the discussion of this potential side effect. Nurses play a crucial role in the evaluation and reporting of patient complaints, changes in functional performance, and clinical symptoms. The development and implementation of a validated nursing care paradigm for statin users in elderly should be established. As millions of older adults continue to use statins globally to reduce their high cholesterol levels, nurses will play an increasingly important role in defeating the presence of statin-induced side effects and reducing the likelihood of serious disability.

Currently, nurses' unique roles in identifying elderly health problems induced by statins improving related nursing intervention are under-recognized; that are geriatric nurses are underutilized as professionals who can help and manage problems in elderly care. For that reason, the absence of studies on health problems associated with statin use in elderly in the nursing community offer platforms for further study. The findings from this review may enhance the development of nursing documentation and intervention. Concern for the evolving roles and functions of geriatric nurses as professionals is well-reflected in this review, supporting the need for more research. Geriatric nurses can play a key role in addressing issues (i.e., SIS) as front-line health care providers. In addition, an increase in health promotion about the prevention of SIS in geriatric nursing care can evolve to a need for further evaluative research. Finally, the prevention of statin-induced symptoms is an important outcome to measure in elderly patients because its adverse effects create a significant impact on the quality of life, as well as increasing morbidity. Geriatric nurses can play a vital role

in the prevention of statin-induced symptoms through nursing practice, education, and further research.

CONCLUSION

Identifying potential drug-safety problems requires skillful nursing observation and is an essential skill for geriatric nurses. Caring for elderly statin users requires sensitivity to look at the chance of drug-related adverse effects in order to improve the quality of life and to reduce patient suffering and morbidity. Since the information on elderly statin shows significantly larger falling risk scores, geriatric nurses should assess cardiovascular conditions as well as the musculoskeletal system along with statin-related adverse reactions. Geriatric nurses should pay attention to the signs and symptoms of side effects of statins; their frequent evaluation of the elderly with statin use is essential to patient care. Specifically, when SIS is suspected, it is essential to recommend that the patient confer with a prescriber for further laboratory analysis and to discuss the potential of modifying pharmacotherapy to best advantage. Future study should be directed at improving the quality of geriatric nursing care through clinical practice, research, education, and policy. Additional studies are needed to further direct practice interventions in elderly with statin use. Nursing professionals are dedicated to the provision of quality care to improve health outcomes for their patients. Evidence-based practice can help them verify which interventions are most effective for meeting their goals. The greatest benefits will come when nurses practice evidence based on literature that provides valuable data to help geriatric settings define how best to care for elderly persons with statin use.

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