Research Article

Daily Caregiving Time and Idleness and Indifference Symptoms of Patients with Dementia Are Independent Predictors Of HDL-C in Caregivers

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Abstract

Background: Caregivers of patients with dementia are chronically stressed, and dementia symptoms can increase a caregiver's sense of burden. In general, low psychological well-being due to chronic stress is associated with low HDL cholesterol (HDL-C).

Purpose: This study aimed to examine the relationship between HDL-C in caregivers of patients with dementia and caregiving factors and dementia symptoms of their care recipients.

Method: We conducted a cross-sectional analysis of HDL-C and caregiving factors as a reflection of the health status of caregivers of patients with dementia, and idleness and indifference as symptoms of their care recipients.

Result: Daily caregiving time and idleness and indifference symptoms of patients with dementia were independent predictors of HDL-C in caregivers (P<0.05).

Discussion: Caregivers spent more time taking care of patients with dementia, and they themselves may have become mentally depressed and less motivated due to the lack of improvement in their care recipients' condition. This may have disrupted their life and prevented them from living actively.

Conclusion: In order to improve the HDL-C status of caregivers of patients with dementia, it will be important to reduce caregiving time by using services that provide caregiver support. This, in turn, would allow caregivers to live actively and improve their motivation and quality of life.

Keywords: *Dementia; Idleness; Indifference; Caregivers; HDL Cholesterol*

Introduction

Caregivers who care for patients with dementia are predicted to have a higher risk of developing coronary heart disease than non-caregivers [1]. Psychological stress is a risk factor for lipid disorders [2, 3], and according to one study, the relative risk of cerebrovascular disease is significantly higher in those with low HDL-C than in those with high HDL-C, with the risk being about three times higher in the former than the latter [4]. Caregivers of patients with dementia experience chronic stress [5], and this is exacerbated by the dementia symptoms of their care recipients, which increases the caregiver's sense of care burden [6]. In general, low psychological well-being due to chronic stress is associated with low HDL-C [7], and few studies have examined factors which worsen HDL-C in caregivers.

The present study aimed to examine the relationship between HDL-C of caregivers of patients with dementia and caregiving factors and dementia symptoms of their care recipients.

Methods

Participants

Participants of this study were caregivers aged ≥65 years who lived with a patient with dementia (hereafter, "care recipient"). Caregivers with poorly controlled hypertension, diabetes, and dyslipidemia were excluded.

Research design

We conducted a cross-sectional analysis of HDL-C and caregiving factors as a reflection of the health status of caregivers. HDL-C influences arterial stiffness and is a powerful determinant of cardiovascular disease [8]. Idleness and indifference, defined as the state in which patients with dementia have lost interest in their surroundings, were assessed as a reflection of care recipient symptoms.

Statistical analysis

HDL-C level, daily caregiving hours, presence of co-residing family members/relatives to help with caregiving, and idleness and indifference symptoms of care recipients were entered as caregiver factors in Pearson's bivariate correlation analysis. HDL-C was used as a dependent variable in the regression linear analysis, and the following independent variables were used as factors contributing to HDL-C: caregiver hours of care per day, presence of family members or relatives living together to help with care, and idleness and indifference symptoms of care recipients. $P<0.05$ was considered statistically significant.

Ethical considerations

This study was approved by the Bioethics Review Committee of Nagoya University. Written consent was obtained from all participants.

Results

Table 1 summarizes the characteristics of the target population. Participants were caregivers aged ≥65 years who lived with a patient with dementia (care recipient). HDL-C levels were within the normal range, and daily caregiving time accounted for about one-third of the day. They were also in situations with few family members to help with caregiving. Idleness and indifference symptoms of care recipients were emerging and slightly interfering with her life.

Table 1: Participant characteristics

	Mean	SD
Caregiver		
HDL-C (mg/dl), standard value	58.3	17.1
Hours of care per day (hours)	8.2	6.5
Family members living together to help with care	.20	.40
Dementia		
Idleness and indifference	2.6	3.4

HDL-C: high-density lipoprotein cholesterol

Table 2 shows associations between HDL-C and caregiving factors and care recipient symptoms. There was a weak association between caregiver HDL-C and daily caregiving time (r=-0.217). HDL-C and idleness and indifference symptoms were also weakly correlated (r=-0.270). Daily caregiving time and co-residing family members who help with caregiving were weakly correlated as well (r=-0.260).

Table 2: Associations between HDL-C and caregiving factors and care Recipient factors

	HDL-C	Hours of care per day (hours)	Family members living together to help with care	Idleness and indifference
HDL-C	1.000	-.217	-.153	-.270
Hours of care per day (hours)	-.217	1.000	-.260	-.151
Family members living together to help with care	-.153	-.260	1.000	.192
Idleness and indifference	-.270	-.151	.192	1.000

HDL-C: high-density lipoprotein cholesterol; R: Pearson's correlation coefficient

Table 3 shows the results of regression linear analysis of HDL-C and caregiving factors and care recipient symptoms. Daily caregiving time and idleness and indifference symptoms were found to be independent predictors of caregiver HDL-C. Low HDL-C was significantly associated with increased daily caregiving time (P<0.05), and low HDL-C was significantly associated with increased idleness and indifference symptoms of care recipients (P<0.05).

Discussion

This study revealed a relationship between HDL-C of caregivers of patients with dementia and caregiving factors and care recipient symptoms. HDL-C was significantly associated with daily caregiving time and idleness and indifference symptoms of care recipients.

Table 3: Regression linear analysis of caregiver HDL-C and idleness and indifference symptoms of care recipients

HDL-C model	Variables	β	t value	P
	(fixed number)		15.569	.000
	Hours of care per day (hours)	-.306	-2.232	.030
	Family members living together to help with care	-.179	-1.295	.202
	Idleness and indifference	-.282	-2.092	.042

HDL-C: high-density lipoprotein cholesterol; **P**: Significance probability

The lipid profile of caregivers has been reported to worsen over time [9]. In this study, caregiver HDL-C was significantly associated with caregiving factors and care recipient symptoms. There was also a weak correlation between caregiver HDL-C and daily caregiving time, with low HDL-C being significantly associated with increased daily caregiving time. The substantial amount of time spent caring for elderly care recipients may be one explanation for the decrease in HDL-C observed among caregivers. In fact, these caregivers spent one-third of the day providing care, and this was partly attributed to the fact that they did not have any family members living with them who could help with the caregiving. This may reflect the social background of many elderly couple households in Japan, in which elderly people are cared for by other elderly people. Caregivers take on the responsibility of caring for the elderly, likely due in part to significant increases in average monthly costs of care [10]. This, in turn, may lead to the accumulation of physical fatigue over a long period and lack of exercise among caregivers. In addition to the decline in physical function with age, nursing care may also exacerbate the lack of exercise, and an insufficient understanding of the care recipient's illness and how to care for them may needlessly prolong the time of care. In this regard,

exercise can improve the lipid profile and contribute to cardiovascular health [11]. For instance, one study found that HDL-C improved when caregivers attended a training program offered as social support [12]. These findings highlight the importance of caregivers understanding the disease of their care recipients and how to provide care, as well as the need for exercise, which can improve HDL-C and reduce the risk of developing cardiovascular disease.

Previous studies have shown that psychiatric symptoms of patients with dementia are closely related to the caregiver's sense of burden of care, and that providing care to such patients leads to a decline in the general health of caregivers [13]. In the present study, we found that caregiver HDL-C was also weakly correlated with symptoms of inactivity and apathy of care recipients, and that low caregiver HDL-C was significantly associated with increased idleness and indifference symptoms of the care recipients. Idleness and indifference symptoms in care recipients can interfere with life events and result in the loss of motivation and interest in daily life. Caregivers spend more time caring for such individuals, which in turn may lead to mental depression and less motivation among the caregivers themselves due to the lack of improvement in the care recipient's condition. This can disrupt the lives of caregivers and prevent them from living active lives. Social support and indirect support can potentially help with relieving caregiver stress, confidence, and malaise [14], and caregivers should use such social services to alleviate mental stress.

Conclusion

Increases in daily caregiving hours, along with idleness and indifference symptoms in care recipients were associated with a decrease in caregiver HDL-C. Reducing daily caregiving hours and improving care recipient symptoms may help increase caregiver HDL-C levels. Moreover, the use of services which support caregiving may also lead to improvements in caregiver HDL-C levels, since such services can reduce the amount of time spent caregiving, keep caregivers active, and improve their motivation and quality of life. Programs that alleviate and improve the symptoms of care recipients may also contribute to improvements in caregiver health.

Conflict of interest statement

The authors have no conflicts of interest to report.

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Author's contributions

Akemi Hirano conceived the idea and designed the study. Akemi Hirano carried out the data analysis and interpretation. Akemi Hirano wrote the first draft of the manuscript and Yusuke Suzuki, Koichiro Ina critically discussed all versions of the manuscript. Yusuke Suzuki, Toshio Hayashi, and Koichiro Ina recruited the participants, and Akemi Hirano contributed to the overall supervision of the study.

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