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Retirement and a healthy lifestyle: opportunity or pitfall? A narrative review of the literature

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Background: Retirement is a life-course transition in late adult life that is marked by major changes that may affect healthy lifestyles. Our aim is to give an overview of the current knowledge on changes in smoking, alcohol consumption, physical activity and dietary habits during the transition to retirement. This may provide clues to a better targeting and timing of preventive activities at older age. **Methods:** Literature search in Medline, Scopus, Embase, PsycInfo, Social SciSearch and SciSearch limited to English-language papers published between 2001 and May 2013. Results of 20 original papers are summarized in a narrative review. **Results:** Some studies report an increase in alcohol consumption after retirement, whereas others found a decrease or no change at all. Those who retired involuntarily tended to increase their alcohol consumption, whereas retirees who quit voluntarily did not change their alcohol consumption. Leisure-time physical activity seems to increase slightly after retirement, especially moderately intensive physical activity. This increase does not compensate the loss of work-related physical activity such as the work itself or work-related transportation. The studies on changes in smoking and dietary habits were too limited to draw conclusions. **Conclusions:** The transition to retirement is accompanied with both favourable and unfavourable lifestyle changes, depending on the type of lifestyle, lifestyle indicator and the personal situation of the retiree. The (pre-)retirement period may well offer a suitable opportunity for preventive action, for example in pre-retirement programmes, planning or other retirement-related support.

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Introduction

Retirement is a life-course transition in late adult life that is marked by major changes that may affect healthy lifestyles. The absence of work activities and restrictions affect daily routines and time availability. Moreover, retirement is often accompanied by changes in identity and changes in social contacts and social activities. Also, retirement may lead to a decrease in income. Due to all these changes, retirees' priorities, way of life and healthy lifestyles are likely to change as well. Retirement may affect healthy

lifestyle changes through several mechanisms, as increased leisure time and loss of restrictions,^{1–3} changing social contacts,^{3,4} stress^{5,6} and reorientation on health.^{4,7} The circumstances surrounding the retirement may influence these changes, especially if retirees frame their retirement as voluntary or not.^{5,8}

Adopting a healthy lifestyle is by no means easy at older age. Supporting the adoption of a healthy lifestyle at the right moment is therefore an important public health issue. Major life transitions such as retirement could present a window of opportunities for prevention. Information about the nature of lifestyle changes

during retirement may provide clues to a better targeting and timing of preventive activities at older age. In addition, it is known that people are more receptive to health messages during life transitions.⁹

The aim of this study is to get an overview of the current knowledge about lifestyle changes during the transition to retirement by means of a literature review. Our research question is: does retiree's lifestyle change after retirement, relative to lifestyle changes found in those who continued to work? Our particular focus is on smoking, alcohol consumption, physical activity and dietary habits, as these types of lifestyle are strongly related to health outcomes.¹⁰

Method

Two systematic searches were carried out in the international literature databases Medline, Scopus and Embase (Search 1) and PsycInfo, Social SciSearch and SciSearch (Search 2). The searches were limited to English-language papers published between January 2001 and May 2013. The following search terms and synonyms were used to search in titles, abstracts and keywords: lifestyle (change) OR (change/increase/decrease) alcohol, smoking, dietary habits, physical activity AND retirement. A detailed description of the search strategy, including search terms, is presented in Supplementary Appendix 1. The results of the two searches are presented separately because of the differences in search strategies.

Search 1 identified 726 papers and Search 2 identified 105 papers (see figure 1 for a flow chart of the selection process). A paper was considered potentially relevant when meeting the following inclusion criteria (as assessed by E.M.Z. or M.v.d.B.):

- The paper is a research paper including information about alcohol drinking, smoking, dietary habits or physical activity.
- The paper had to include at least two measurements: before and after retirement. Studies with recall questions about lifestyle before retirement were also included.
- Lifestyle changes of retirees were compared with lifestyle changes among those who continued to work.

From the 726 papers from Search 1, 43 papers met the inclusion criteria. Two authors (E.M.Z. and M.v.d.B.) considered these 43 papers in more detail, by studying the abstract and—if necessary—the entire paper. Search 1 resulted in a selection of 15 relevant papers.

The titles from the 105 papers from Search 2 were scanned by E.M.Z. Five papers were selected as (possibly) relevant. One of these papers was already included in the result of Search 1. Abstracts from the other four papers were assessed by M.v.d.B. Three of them were considered relevant.

Next the snowball-method was applied to detect papers that might have been missed in the two searches. First, E.M.Z. or M.v.d.B. checked the titles in the reference lists of the 18 selected papers on relevance, according to the inclusion criteria. They then explored titles in more detail, by assessing the abstract and—if necessary—the entire paper. The same procedure was followed for all papers that cited one or more studies in our selection of 18 papers. This additional search was carried out in Scopus and resulted in two extra papers. In all, 20 papers were selected for this review, with two papers providing information about changes in smoking after retirement, two about dietary habits, nine about alcohol drinking and nine about changes in physical activity after retirement. All studies included a design that allowed comparing changes in lifestyle after retirement with changes in lifestyle among those who continued to work.

Papers found in the two searches were excluded because of the following reasons:

- the focus was on interventions to realize lifestyle change;

- the focus was on obesity or body weight, without information about dietary habits or physical activity;
- the focus was on other types of lifestyle than addressed in this study;
- the design was cross-sectional, without recall questions about lifestyle before retirement;
- the paper was not a research paper, but an opinion article.

Description of results

We followed the format of a narrative review to summarize the results. A meta-analysis was not suitable due to the diversity of the selected papers. Retirement was indicated as fully retired, measured by self-reports or formal registrations. Characteristics of the studies are presented in table 1. For each paper, significant lifestyle changes before and after retirement were described, relative to lifestyle changes found in those who continued to work. When possible, the context of the retirement is described, especially if retirees frame their retirement as their own choice ('voluntary retirement') or forced ('involuntary retirement').

Results

Characteristics of the studies

Table 1 provides descriptive information about the 20 studies included in this review. The studies all had a longitudinal design. All but one study comprised lifestyle indicators before and after retirement. One study used a recall question about lifestyle change in the 5 years including the age of retirement.⁸ Most studies especially focused on lifestyle changes after the transition to retirement. Six studies aimed to investigate lifestyle changes after (stressful) life events or socio-demographic influences in general, including retirement.^{3,11–15} In two studies, information about the voluntariness of the retirement was included.^{8,16} All analyses were adjusted for age and gender and the vast majority also adjusted for health status (table 1).

Smoking

Two studies evaluated the association between retirement and smoking.^{8,17} Retirees were more likely to quit smoking than those who remained in work or were already retired, as was shown in an English household survey among 1712 smokers.¹⁷ In a Dutch study among 1604 employees of Information and Communication Technology (ICT) companies and older Civil Servants, the association of retirement with lifestyle changes was studied in the context of voluntary retirement.⁸ In this Dutch study, retirees were asked if their retirement was voluntary or not. Voluntary retirement was not associated with changes in the amount of smoking, relative to non-retired employees. On the contrary, those who retired involuntarily had an increased risk to smoke more and a decreased risk to smoke less compared with non-retired employees.

Alcohol consumption

No association was found between retirement and the amount of drinking by Dutch employees who retired voluntarily, compared with non-retired employees.⁸ However, those who experienced their retirement as involuntary less often decreased their alcohol consumption than non-retired employees. In a study among 595 Americans contacting a medical centre, retirement had no effect on alcohol consumption.¹⁶ Other factors rather than retirement status (e.g. poorer health status or lower income before retirement) predicted a steeper decline in alcohol consumption after retirement. A study among 1157 American university employees assessed the impact of three pre-retirement workplace stressors (sexual harassment, generalized workplace abuse and

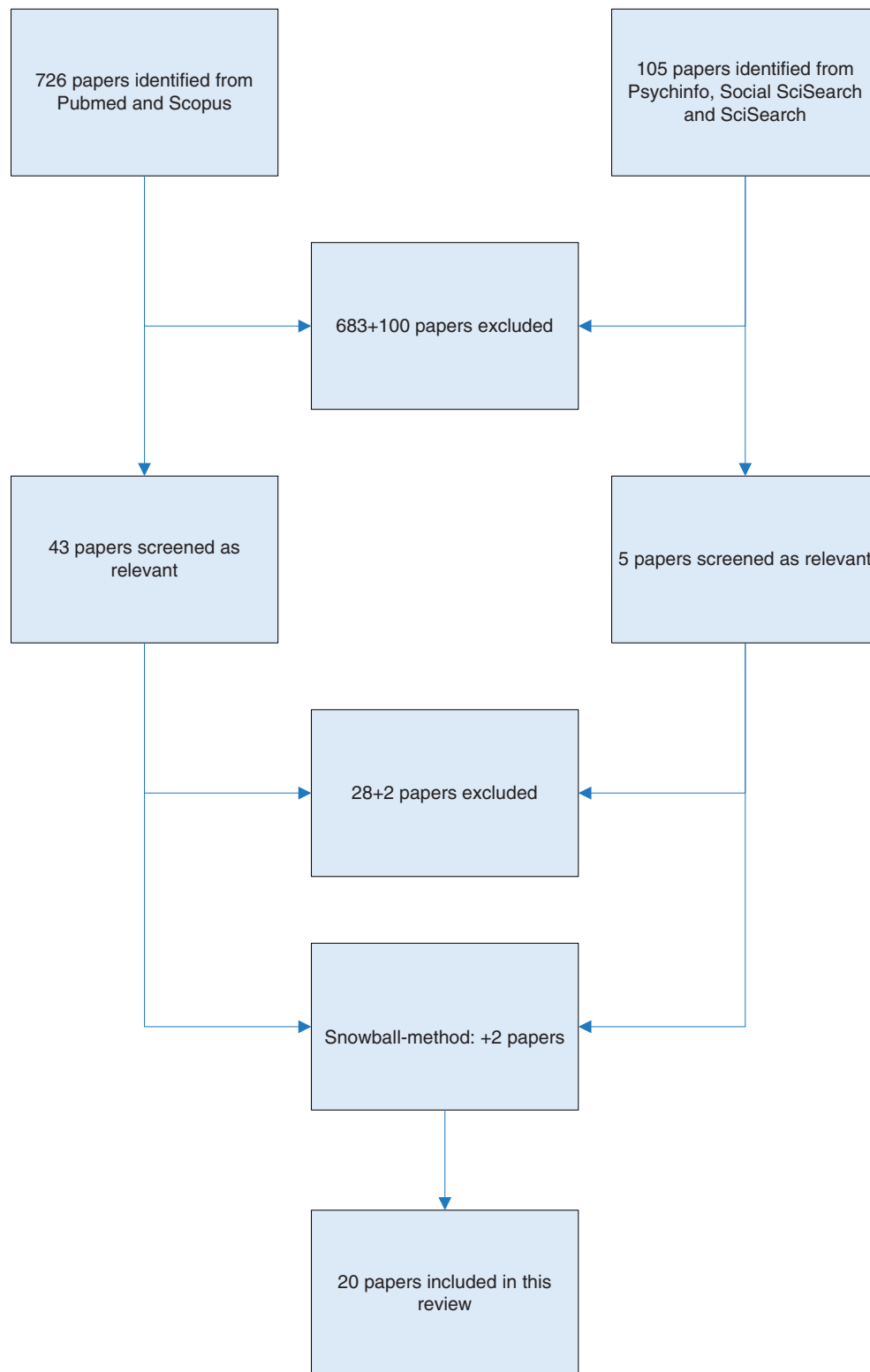


Figure 1 Flow chart of the selection process

psychological workload) on alcohol consumption after retirement.¹⁸ Retirees who experienced sexual harassment or generalized workplace abuse in their pre-retirement job reported higher levels of alcohol consumption compared with those with comparable stressful work environments who continued to work. Results may be biased because adjustments for health were lacking. Another American study examined changes in alcohol consumption associated with stressful life events.³ Retirees increased their

alcohol consumption, compared with non-retired employees. Problem drinkers were less likely to decrease drinking after retirement. The role of retirement was also investigated in two American studies about drinking trajectories in American women¹³ and men.¹⁴ The authors concluded that retired women more often decrease their alcohol consumption after retirement compared with women in employment, whereas no effects were found for men.

Table 1 Characteristics of the studies

Authors	Study subject	Follow-up period	Study sample	Lifestyle indicator	Adjusted for age, gender and illness	Main findings
Smoking Lang <i>et al.</i> , 2007	Smoking cessation after retirement	1998–2004	1712 smokers from a national English household survey	Smoking yes/no	Yes	Retirement → more smoking cessation
Henkens <i>et al.</i> , 2008	Health behaviour after (in)voluntary retirement	2001–07	1604 employees of three large Dutch ICT companies	Change in smoking in the past 5 years	Yes	Involuntary retirement → increased smoking; voluntary retirement → no effect
Alcohol consumption Henkens <i>et al.</i> , 2008	Health behaviour after (in)voluntary retirement	2001–07	1604 employees of three large Dutch ICT companies	Change in alcohol drinking in the past 5 years	Yes	Involuntary retirement → less decreased drinking; voluntary retirement → no effect
Brennan <i>et al.</i> , 2010	Drinking patterns after retirement	10 years	595 American 55–65 who contacted a medical centre in California	Frequency and quantity of alcohol consumption, problem-drinking	Yes	Retirement → no effect on drinking patterns
Richman <i>et al.</i> , 2006	Effect of pre-retired workplace stressors on drinking after retirement	1996–2002	1157 American university employees	Frequency and quantity of alcohol consumption	No health status	Retirement → more drinks a day and higher drinking frequency after high workplace stressors
Bacharach <i>et al.</i> , 2004	Alcohol consumption and drinking problems after retirement	2001–02	1083 American blue-collar workers	Frequency and quantity of alcohol consumption, periodic heavy drinking, problem-drinking	Yes	Retirement → more periodic heavy drinking; no effect on alcohol consumptions and problem-drinking
Bacharach <i>et al.</i> , 2007	Severity of problem-drinking after retirement of men with a history of problem-drinking	2000–02	71 American male blue-collar workers	Severity of problem-drinking	Yes	Retirement → decline in the severity of drinking problems among males with a history of problem-drinking, no effect among males without history of problem-drinking
Bacharach <i>et al.</i> , 2008	Problematic drinking behaviour after (in)voluntary retirement	2001–02	304 American blue-collar workers 50+	Frequency and quantity of alcohol consumption, problem-drinking	Yes	Involuntary retirement → more alcohol consumption; voluntary retirement → lower alcohol consumption and drinking problems
Perreira <i>et al.</i> , 2001	Changes in alcohol consumption after stressful life events	1992–98	7731 Americans 51–61	Drinking yes/no, quantity of drinking, problem-drinking	Yes	Retirement → increase in alcohol consumption; less decrease in problem-drinking
Bobo and Greek, 2011	Alcohol trajectories among older women	1998–2008	4439 randomly sampled American women	Drinks per day	Yes	Retirement → more often decrease in drinking, no effect on increase in drinking
Bobo <i>et al.</i> , 2013	Alcohol trajectories among older men	1998–2008	3105 randomly sampled American men	Drinks per day	Yes	Retirement → no effects
Physical activity (p.a.) Berger <i>et al.</i> , 2005	Impact of retirement on p.a.	1991–96	699 City of Glasgow inhabitants	Frequency, duration and intensity of activity at work, home and leisure activity, related to recommendations for p.a.	Yes	Retirement → increase in home- and leisure activity; loss of work-related activity. Decrease in respondents who met the p.a. recommendations for total activity.
Brown <i>et al.</i> , 2009	Impact of life events of p.a. in women	1999–2002	6660 Australian women from a national representative survey	Integrated p.a. measure, calculated from the frequency and duration of low-, moderate- and vigorous-intensity leisure-time p.a.	No health status	Retirement → increase in leisure-time p.a.
Chung <i>et al.</i> , 2009	Changes in p.a. after retirement	1992–2005	11 469 Americans from a national survey	Participation in vigorous p.a. or exercise	Yes	Retirement from a physically demanding job → overall p.a. declined; Retirement from a sedentary job → p.a. increased
Henkens <i>et al.</i> , 2008	Health behaviour after (in)voluntary retirement	2001–07	1604 employees 50+ of three large Dutch ICT companies	Change in participation in p.a. in the past 5 years	Yes	Involuntary + voluntary retirement → more p.a.
Lahti <i>et al.</i> , 2011	Changes in leisure-time p.a. after retirement	2000–07	6706 Helsinki City employees	Quantity and intensity of p.a. in four groups of intensity	Yes	Retirement → increase in moderate-intensity p.a.; decrease in vigorous p.a.; decrease in inactivity

(continued)

Table 1 Continued

Authors	Study subject	Follow-up period	Study sample	Lifestyle indicator	Adjusted for age, gender and illness	Main findings
Evenson <i>et al.</i> , 2002	Changes in leisure-time p.a. after retirement	1986–89	Population sample of 1825 + 5957 Americans from four communities	Quantity and intensity of leisure-time activity and sports or exercise, time spent on television watching	Yes	Retirement → increase in sports or exercise; no change in vigorous activity
Slingerland <i>et al.</i> , 2007	Changes in p.a. after retirement	1991–2004	971 Dutch inhabitants of a medium-sized city	Time spent on: work-related transportation p.a., sports, non-sports leisure-time p.a.	Yes	Retirement → decline in work-related transportation, no changes in sports or non-sports leisure-time p.a.
Koeneman <i>et al.</i> , 2012	Changes in p.a. after widowhood or retirement	1992–96	186 Dutch inhabitants	Time spent in sports and moderate- to vigorous-intensity p.a.	Yes	Retirement → no changes in sports and moderate/vigorous intensity p.a.
Touvier <i>et al.</i> , 2010	P.a. patterns after retirement	1998–2001	1689 French volunteer subjects	Frequency and duration of work-related and leisure-time p.a., related to recommendations for p.a.;	No health status	Retirement → increase in leisure-time p.a., especially moderate-intensity activity
Dietary habits Heildán <i>et al.</i> , 2012	Changes in food habits after retirement	2000–07	2425 employees of the City of Helsinki, Finland	Frequency of healthy food habits, based in dietary recommendations	Yes	Retirement → higher prevalence of healthy food habits among women, not among men
Akbaraly and Brunner, 2008	Socio-demographic influences on fish consumption	1991–2002	4149 London-based office staff, working in civil service departments	Self-reported amount and frequency of fish-consumption (fried fish or recommended fish)	No	Retirement → no changes in fish consumption

p.a. = physical activity.

Bacharach *et al.*^{2,19,20} carried out three studies on different aspects of the effects of retirement on drinking behaviour in samples of American blue-collar workers. In the first study among 1083 blue-collar workers, no differences in alcohol consumption between the pre-retirement period and 1 year after retirement were found between retirees and employees.² The only drinking behaviour on which retirement had a significant effect was binge drinking. Those who were fully retired were twice as likely to engage in periodic heavy drinking compared with those who remained fully employed. There were no significant changes between retirees who fully retired and employees engaged in bridge employment. The second study focused on 71 male blue-collar workers with a history of problem-drinking.¹⁹ Retirement had no significant impact on alcohol consumption of workers without a problem-drinking history, but retirees with a baseline drinking problem showed a decrease in problem-drinking after retirement compared with non-retirees. The breadth and depth of social support seem to play a part in this. The third study investigated the perceived voluntariness of retirement among 304 blue-collar workers.²⁰ Retirees with involuntary retirement perceptions increased their alcohol consumption, whereas retirees with voluntary retirement perceptions showed decreased alcohol consumption and drinking problems, compared with non-retired employees.

Physical activity

Nine studies reported on changes in physical activity in relation to retirement. Studies on leisure-time physical activity and studies on overall physical activity are presented separately.

Leisure-time physical activity

Several studies suggest an increase in leisure-time physical activity after retirement.^{11,21–23} Among 6660 Australian women, it was found that women's overall leisure-time physical activity increased after retirement, compared with non-retired women.¹¹ Analyses were not adjusted for health. The same was found among 7782 Americans with physical activity increasing through their participation in exercise and sports.²¹ There were no differences in vigorous sport participation between retirees and employees; the prevalence decreased in both groups. In a Finnish study among 6706 Helsinki City employees, it was found that retirement was associated with an increase in moderate-intensity leisure-time physical activity of 42 minutes a week for men and of 31 minutes for women.²² Changes in vigorous-intensity physical activity were not observed. The occurrence of physical inactivity is lower among retirees compared with those still employed. A study among 1689 French volunteers showed an increase in leisure-time physical activity following retirement of 2 hours a week,²³ whereas employees showed no change at all. Retirees' change was attributed to an increase in moderate-intensity activities, such as walking. A study among 971 Dutch inhabitants concluded that retirees' participation in sports or other non-sports leisure-time physical activity did not increase or decrease after retirement, compared with non-retired employees.²⁴ However, this conclusion is criticized by other authors, because of the inaccurate measure for time spent on physical activity.²⁵ Another Dutch study among 186 elderly subjects found no differences in time spent on sports and moderate to vigorous intensity activity between retirees and those who continued employment.¹⁵ Finally, an English study among 699 inhabitants of City of Glasgow showed a little increase in leisure-time physical activity and home activity level before and after retirement, compared with those still in employment.²⁶

Overall physical activity

Although several studies found an increase in leisure-time physical activity after the transition to retirement, an increase in overall

physical activity (leisure time and work-related physical activity) after retirement was not reported. Three studies showed that, in contrast to increasing or constant leisure-time physical activity levels, overall physical activity declined after retirement.^{8,24,26} Among 971 Dutch retirees, a reduction in total physical activity was found, due to the ending work-related transportation physical activity. Although retirees decrease their non-sport leisure activity less often compared with non-retirees, this seems not enough to compensate for the ending work-related transportation activity.²⁴ A study among 699 inhabitants of City of Glasgow showed that retirees less often met the physical activity recommendations compared with employees, due to the loss of work-related activity.²⁶ The Dutch study among 1604 employees found that overall physical activity increased after retirement. This increase was not related to the perceived voluntariness of the retirement.⁸ Finally, a study among 11 469 Americans found that overall physical activity decreased in people retiring from physically demanding jobs, whereas retirees who had a sedentary job increased their overall physical activity.²⁷

Dietary habits

Two papers comprised indicators of dietary habits before and after retirement. A study among the staff of the City of Helsinki ($n=2425$) examined whether healthy food habits, as recommended from dietary recommendations, change after retirement.²⁸ They found that healthy food habits increased more among retired women compared with women still employed. Among men, there were no associations with retirement. A study among London-based office staff focused on social-demographic influences on fish consumption. This study showed no differences in the recommended fish, fried fish and total fish consumption between retirees and those still at work.¹²

Discussion

Main findings

In this paper, we investigated lifestyle changes during the transition to retirement. The available studies show that retirement may indeed be associated with changes in lifestyle. The impact of retirement on lifestyle is, however, heterogeneous: it depends on the type of lifestyle, lifestyle indicators and the personal situation of the retiree, e.g. the type of previous work and whether the retirement was voluntary or not. For alcohol consumption, results are inconsistent across studies. Some studies report an increase in alcohol consumption after retirement, whereas others found a decrease in drinking or no change at all. Those who retired involuntarily tended to increase their alcohol consumption, whereas retirees who quit voluntarily did not change their alcohol consumption. Leisure-time physical activity seems to increase slightly after retirement in most studies, especially moderate-intensive physical activity. However, this increase does not compensate for the loss of work-related physical activity, such as physical activity during work itself or work-related transportation. For dietary habits smoking, there is not enough evidence to draw any conclusions.

Discussion of results

Our results show that retirement is related to both positive as well as negative lifestyle changes. We discuss several mechanisms that may explain these findings.

The voluntariness of the retirement seems to be an explaining factor for changes in the consumption of alcohol after retirement.^{8,16} Retirees who frame their retirement as involuntary are more likely to increase their alcohol consumption. In one study, the same pattern is suggested for smoking.⁸ These findings are in line with a previous study of Van Solingen and Henkens, who found that

adjustment problems may arise from a lack of control over the retirement decision.²⁹ Although it is not clear from our studies what retirees mean exactly when they consider their retirement as involuntary, it is plausible that adjustment problems are related to unhealthy lifestyles through the mechanism of stress.⁶

It seems that stress plays especially a part in the relationship between retirement and drinking. For alcohol drinking, a diversity of indicators were used in our selection of studies. This may partly explain the heterogeneity in findings about changes in drinking after retirement. Also, several mechanisms can play a role. Work-related permissive drinking norms and restrictions may lead to decreased alcohol consumption after retirement is suggested by some.^{16,19} Others suggest that work-related social contacts and restrictions in time regulated appropriate drinking, resulting in increasing alcohol consumption after retirement.³ Furthermore, retirement can be a stressful life event in itself, and stress may lead to unhealthy behaviour.⁶ It remains unclear which mechanisms are responsible for the relationships found in this study, but possibly the diversity in mechanisms also explains the inconsistent findings about drinking after retirement in this study.

The increase in leisure-time physical activity after retirement may be explained by the increase in available time.⁴ Possibly, an orientation on health benefits and the day structure and social contacts arising from sport activities also attribute to the increasing leisure-time physical activity.⁴ The physical demands of the pre-retirement job may affect changes in overall physical activity after retirement. To maintain the pre-retirement physical activity levels, those with physically demanding jobs are more likely to lower their physical activity levels after retirement. This may be a risk, underlined by the earlier finding that those working in physically demanding occupations tend to be less active outside work.²⁶ Furthermore, it is known that those who retire from a physically demanding job gain more weight compared with those who retire from a sedentary job.^{30,31}

Methodological considerations

One of the limitations of this literature review is the lack of studies about dietary behaviour and smoking during the transition to retirement. Furthermore, it remains unclear what mechanisms are responsible for lifestyle changes after retirement, especially with respect to changes in alcohol consumption. Our findings suggest that available time and stress play a part, but other aspects of retirement, e.g. changes in income, social economic status or identity, are not (well) represented in our selection of studies. More research is needed to complete this picture.

The number of studies reporting about lifestyle changes after retirement is limited. Studies differ largely in sample, measurements and social and societal context. For example, the (shifts in) pensionable age and possibilities of a gradual retirement vary widely between countries. Furthermore, it is known that the retiree's social environment is related to adjustment problems.²⁹ This may explain different outcomes between studies. For future research, it is useful to include especially this context. Furthermore, in our selection of studies, it was not possible to distinguish long-term and short-term effects of retirement on lifestyle. We recommend addressing differences in long- and short-term effects in future research, as the effects of stress and adjustment problems related to retirement are possibly temporary.

Finally, a limitation is that differences in lifestyle between the retired group and the non-retired employees are in most, but not in all, studies adjusted for health status. As bad health may be an obvious reason to early retire, it is plausible that the retired group is less healthy compared with the employees. These health differences may well be a reason for differences in healthy lifestyles between retirees and employees.

Implications

Our findings show that the transition to retirement is accompanied with both favourable and unfavourable lifestyle changes, depending on the type of lifestyle, lifestyle indicator and the personal situation of the retiree. Two retirement-related aspects were found to be relevant: first, how retirees experience their retirement—as their own choice or not—may affect alcohol consumption after retirement. Second, the physical demands of the pre-retirement job influence changes in physical activity after retirement.

Although this study provides no unambiguous message about the impact of retirement on a healthy lifestyle, our findings suggest that the retirement or pre-retirement period may well offer a suitable opportunity to provide support in adopting a healthy lifestyle at older age. A healthy lifestyle could for example be a topic in pre-retirement programmes, planning and other retirement-related support. The personal situation of the retiree is of major importance in this support.

Supplementary data

Supplementary data are available at *EURPUB* online.

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Conflicts of interest: None declared.

Key points

- The transition to retirement is accompanied with both favourable and unfavourable lifestyle changes.
- Changes in healthy lifestyle during retirement vary according to the type of lifestyle, lifestyle indicators and the personal situation of the retiree.
- The (pre-)retirement period may well offer a suitable opportunity for preventive action.

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