

# Factors associated to managers' belief whether their employees cannot and do not want to work until an older age, and measure activities increasing their employees' possibilities of working in an extended working life.

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## Research article

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# Abstract

**Background:** The demographic situation with an increasing number of elderly citizens will postpone the retirement age in most countries. However, retirement is a socially accepted way to withdraw from a demanding working life.

**Objectives:** The aim of this study was to evaluate the main factors associated to managers' beliefs their employees want to or can work until 65 years of age or beyond, and measures increasing participation in an extended working life.

**Methods:** The baseline survey in a follow up study including 249 managers in the municipality sector in Sweden. By logistic regression we investigated the associations between two outcome measures: i) whether employees wanted to work, and ii) whether employees could work until 65 years of age or beyond, and statements within nine areas related to a sustainable working life as well as measure statements for an extend working life.

**Results :** Of the managers 79% stated their employees 'can' and 58% that their employees 'want to' work until 65 years of age or beyond. The employees' health, physical work environment, skills and competence were statistically significant to the managers' belief that their employees could not work until 65 years of age or beyond. Lack of support in the social work environment and lack of possibilities to arrange relocations were the most important factors to managers' beliefs whether employees would not want to work until age 65 or beyond.

**Conclusion:** To offer the employee other tasks in the workplace if needed was a measure statistically significant associated to increase the managers' belief whether their employees both could and wanted to go on and work until 65 years of age and beyond. Additionally, the managers' belief measures to decreased physical and mental strains and rotation between different tasks to reduce work load and wear would increase whether their employees can work, and reduction of pace and working hours would increase whether employees want to work in an extended working life past 65 years of age. The managers' perspective on how their employees 'can' and 'want' to work will hopefully contribute to the understanding of the extended working life process.

## Background

Retirement is a possible and socially acceptable way for employees to withdraw from working life, e.g. from a physically and mentally demanding work situation, if the private finances will sufficient with pension, if anyone does not want to continue working due to the social situation and environment at the work place or because their skills not being used in the work tasks and or not experiencing drive and stimulation from the work tasks (1, 2). However, the fraction of older people is continuously increasing in most of the industrial world (3). Longevity and lower fertility characterise the current demographic trend and is leading to an increasingly ageing population. A consequence analysis carried out by the Organization for Economic Co-operation and Development (OECD) compared the elderly boom to have

economic and budgetary implications like the social effects arising from natural disasters (3). The increasing older population means more people in the pension system, and the demographic change will give an increased old age dependency ratio when fewer citizens in the workforce must provide for an increasing number of elderly citizens. Retirement ages in many countries are being postponed as a way of adapting to the new demographic distribution. Older people are encouraged to go on and participate in the labor force for as long as possible (3–6). This demographic situation stresses the importance of factors motivating older employees to experience that they can and want to work until an older age.

Managers have a key role in how to motivate and make measures in the work situation to enable employees to extend their working lives. However, what are the determinant factors for work force participation and for a sustainable working life? Earlier studies have identified nine determinant areas connected to whether people can and want to work in an extended working life or not (1, 7–36). Those nine areas is also described in the theoretical swAge-model (Sustainable working life for all ages) and are: 1) self-rated health, diagnoses, function variation; 2) physical work environment; 3) mental work environment; 4) work schedule, work pace, recuperation; 5) private economy; 6) private social environment; 7) work social environment; 8) work tasks, stimulation, motivation, self-crediting; 9) knowledge, skills, competence. Good health is a very important factor to whether people are able to work, or to take sick leave or some form of retirement (1, 7–12). Poor physical work environment and work conditions increase the risk of work accidents, leave people worn out and push them to leave working life early (1, 7–9, 13–15). Mental work conditions, stress and lack of job control have also been mentioned as important predictors for people's sick leave and retirement planning (1, 7–9, 16–18). Some studies highlight moderate working pace and working hours as very important for a sustainable working life and for the older workforce, and have also shown that older workers seem to need more time for rest and recuperation (1, 7–9, 19–21). Another factor often described in relation to early retirement is personal finances, i.e. incentives that keep employees in the workforce through the risk of poverty or make it possible to stop working within sufficient financial well-being (1, 7–9, 22–24). The private social environment and attitudes in the surrounding society also influence withdrawal from working life, for example marital status, whether the life partner is working or if the older worker wants to spend more time with relatives and leisure pursuits (1, 7–9, 25–27). The social work environment and situation is also of great importance. What the management and leadership in the company is like, whether the attitude is positive towards and between employees, whether workers are treated as included in the organisation, or whether there is a stereotypical idea of elderly workers as stagnant and an encumbrance (1, 7–9, 28–30). A feeling of satisfaction with the work tasks, the daily work as well as receiving attention, wisdom and experience in the work situation have also been cited as important factors in the intention to extend working life (1, 7–9, 31–33). Another factor that affects the decision to stay or go according to previous research is the level of education, competence and possibility of skill development, but also whether employees are able to use their skills in their work tasks (1, 7–9, 34–36). To better understand how managers could motivate employees and make working life more sustainable until an older age, it is of particular interest to examine managers' beliefs on whether their employees 'can' and 'want to' work until an older age, associated with the nine areas.

## Methods

The aim of the present baseline study, among managers in municipality organisations, was to evaluate the main factors associated to managers' belief whether their employees want to, or can, work until 65 years of age or beyond. The aim was also to investigate which measure the managers believe could increase their employees' ability and wish to work in an extended working life.

The dataset used in this study originated from a baseline survey conducted in 2018, in a longitudinal study with municipality managers. The survey examined managers' attitudes toward their employees and factors of interest for work participation and retirement.

## Study population

Working in the public sector has been associated with early withdrawal from working life in a previous study (37, 38). The study population consisted of all managers in one of the largest municipalities in Sweden. The 456 subjects were identified by the personnel register as employed and employed as manager. The study population all had the same employer, which minimised the risk of different employment conditions, rehabilitation policies and retirement policies (39). The individuals in the present study were sent a questionnaire through their work electronic mail. After two reminders, 249 individuals answered the questionnaire. This corresponded to a response rate of 54,6%.

The gender distribution of the study population was 29% male managers and 71% female managers. The age distribution in the study group was 25–67 years of age, with an average age of 50.4 years. 96% of the study population worked 40 h/week (full-time), and 90% were managers in a full-time position. The distribution of the managers sectoral work areas was: 38.6% Educational work (child, adolescent and adult education); 14.5% Care, health care, rehabilitation work, housing, home service; 11.6% Social and curative work; 9.2% Technology, IT, city environment, water maintenance, electric operation maintenance, kitchen and food distribution; 4.4% Library, archive, culture, tourism, municipality leisure activities; 21.7% Administration, support functions (HR, finance, law, administrative support function, management, communication, digitization).

## Questionnaire

Two questions formed the basis for the outcome in this study. The first question was whether the responding managers thought their employees wanted to work until 55–59, 60–64, 65 or 66 years of age or beyond, and the second question was whether the responding managers thought their employees could work until 55–59, 60–64, 65 or 66 years of age or beyond. The answering options were dichotomised at 65 years of age (i.e. working until < 65 versus  $\geq$  65 years of age).

The questionnaire was developed in the research group and tested and used before in other studies, the first time in a group of 905 responding managers in year 2006. The questions were sorted into the nine areas in the swAge-model: 1) self-rated health, diagnoses, function variation; 2) physical work environment; 3) mental work environment; 4) work schedule, work pace, recruitment; 5) private finances;

6) private social environment; 7) work social environment; 8) work tasks stimulation, motivation, self-crediting; 9) knowledge, skills, competence.

## Statistical analysis

Logistic regression models generating odds ratios (OR), 95% confidence intervals (CI) and p-values were used to investigate the statements associated with the outcomes of the managers' belief that their employees 'want to work until 65 years of age or beyond' and 'can work until 65 years of age or beyond'. For each of the two outcomes, we used the following analytical strategy:

1) *Analyses within each of the nine areas*: We started with univariate analyses, i.e. we evaluated the associations for one statement at a time. In the second step we kept the statement with the lowest p-value (if  $p < 0.05$ ) and tentatively included all other statements, one at a time. In the third step we kept the two statements with the lowest p-values (if both  $p < 0.05$ ) and tentatively included the remaining statements one at a time. This procedure continued for as long as the p-values for all included statements were  $< 0.05$ .

2) *Analyses including all nine areas*: The multivariate model for all determinant areas together started by including the selected statements from area 1) and area 2) etc. to build a multivariate model. The statements with p-values  $< 0.05$  were kept in the model in the next step, in which we also included the selected statements from the next area. This procedure continued until all nine areas were included in a final model. After that, the discarded statements from the nine areas were tested, one at a time, against the final model, to check once more whether the model was robust.

3) *Measure variables*: To examine the measure variables associated to the managers' belief that their employees can and want to work in an extended working life the same procedure was used univariate analyses, i.e. we evaluated the associations for one statement at a time. In the second step we kept the statement with the lowest p-value (if  $p < 0.05$ ) and, if there were more than one statement in the areas, tentatively included other statements one at a time. This procedure continued for as long as the p-values for all included statements were  $< 0.05$ .

In the results section of the paper below, the univariate and the statements in the final models are presented.

## Results

### Outcomes

The managers were asked when they experienced their employees to be older workers. The median age for an older female worker was 60 years of age according to the managers' rating responds, and the median age for an older male worker was also 60 years of age according to the managers' ratings.

The managers stated different ages to be the possible general retirement age for their employees, i.e. until what age in general they believe their employees can work and want to work. The proportion of managers who stated that most of their employees 'can work until 65 years of age or beyond' was 77% (Table 1). The proportion of managers who stated that most of their employees 'wanted to work until 65 years or beyond' was 58% (Table 2). However, the proportion of responding manager stating that they themselves could work until 65 years of age or beyond was 86%. The proportion of managers wanting to work until 65 years of age or beyond was 43%.

## **Statements associated with managers' belief that their employees in general 'cannot work until 65 years of age or beyond'**

The statements from the nine determinant areas was analysed with logistic regression analysis to identify the association between the statements and managers belief that their employees in general cannot work until 65 years of age or beyond (Table 3). Both statements univariate estimates in the area "health, diagnoses, function variation" was statistically significant associated with whether the managers believed that their employees could not work until 65 years of age or beyond, i.e. "The majority of my employees have some kind of diagnosis or chronic disease", "The majority of my employees do not seem to experience well-being in their daily life". Both statements were statistically significant and included in the final multivariate model in the area. Of the seven statements univariate estimates in the area "physical work environment" five were statistically significant to the managers' belief that their employees could not work until 65 years of age or beyond. However, only two statements were finally statistically significant and included in the multivariate model of the area, i.e. "I experience that my employees in general have many tasks involving a physically demanding work load and heavy lifting", "I do not experience that my employees have a reasonable physical work load". The area "private finances" consists of only one statement that was statistically significant to the managers' belief that their employees could not work until 65 years of or beyond, i.e. "I experience that my employees in general feel pressured by their financial situation". In the area "work social environment" two of seven statements univariate estimates were statistically significant and associated to whether the managers believed that their employees could not work until 65 years of age or beyond, and therefore included in the multivariate model, i.e. "My employees in general do not receive sufficient support from me to be able to work until ordinary retirement age", "I am not satisfied with the extent of support that I offer my employees for them to be able to cope with their work tasks". Three of the seven statements in the area "work task stimulation, motivation, self-crediting" univariate estimates were statistically significant and associated with whether the managers believed that their employees could not work until 65 years of age or beyond, i.e. "I do not experience it being possible to adjust work tasks to elderly employees in my organisation", "In my experience it is hard to find work tasks to relocate employees who experience their work environment as too physically demanding" and "In my experience it is hard to find work tasks to relocate employees who experience their work environment as too mentally demanding". However, only one of these

statements was statistically significant in the final multivariate model in the area, i.e. "I do not experience it being possible to adjust work tasks to elderly employees in my organisation". In the area "competence, skills, knowledge development" three of seven statements univariate estimates were statistically significant but only one statement, "I do not experience that my employees have access to sufficient technical support", was statistically significant and included in the final result after the multivariate modelling. There were no statistically significant associations in the areas "Mental work environment", "Work schedule, work pace and recuperation" and "Private social environment" to whether the managers believed that their employees could not work until 65 years of age or beyond.

In the final multivariate model of all areas five statements were statistically significant and associated with whether the managers believed that their employees could not work until 65 years of age or beyond (Table 4). The statements came from three of the nine areas. One statement came from the area "Health, diagnoses, function variation", two from "Physical work environment" and one statement came from the area "Competence, skills, knowledge development". The strongest observed association in the multivariate model was for the statement "I do not experience that my employees have a reasonable physical work load" followed by "I experience that my employees in general have many tasks involving a physically demanding work load and heavy lifting", "I do not experience it being important to keep elderly employees in the organisation based on their competence", "I do not experience that my employees have access to sufficient technical support", "The majority of my employees have some kind of diagnosis or chronic disease"

## **Measure activities to enable employees' ability to work until 65 years of age or beyond**

In the next step a logistic regression analysis was used to investigate 28 possible measure activities associated to managers' belief that their employees can work until 65 years of age or beyond. The measure activities were related to eight of the nine determinant areas, i.e. no measure activity was related to the area "Private social environment". The highest statistically significant corresponding odds ratio (OR) was that of the measure activities "Decrease of physical work demands"; "Other work tasks in the workplace"; "Rotation between different work tasks to decrease physical work load and strain" in association to managers' belief whether their employees could work until 65 years of or beyond. Additionally, the measure activities "Rotation between different work tasks to decrease mental work load and strain" and "Decrease of mental work demands" were statistically significant and associated to managers' belief whether their employees could work until 65 years of age or beyond.

## **Statements associated with managers' belief whether their employees in general 'do not want to work until 65 years of age or beyond'**

To identify the association between the statements from the nine determinant areas and managers' belief whether their employees in general not want to work until 65 years of age or beyond the association was analysed through logistic regression analysis (Table 6). In the determinant area "Health, diagnoses, function variation" one of the two statements univariate estimates was statistically significant, i.e. "The majority of my employees have some kind of diagnosis or chronic disease", and included in the final multivariate model in the area. In the area "Physical work environment" one of the seven statements univariate estimates was statistically significant, i.e. "In my experience it is hard to find work tasks to relocate employees who experience their work environment as too physically demanding", and included in the final multivariate model. In the area "Mental work environment" one of the six statements univariate estimates was statistically significant and associated to whether the managers believe that their employees do not want to work until 65 years of age or beyond, i.e. "I do not experience that there is a general balance between the demands put on my employees in their work, and the control they have in executing their work tasks". In the area "Work schedule, work pace and recovery" two of four statements were statistically significant to whether the managers believed that their employees would not want to work until 65 years of age or beyond, i.e. "I do not experience that my employees in general have sufficient opportunity of taking breaks when working" and "I do not experience that my employees in general have a good work schedule that enables recuperation between work shifts". However, only the statement "I do not experience that my employees in general have sufficient opportunity of taking breaks when working" was statistically significant and included in the modelling of the final multivariate model of the area. In the area "Work social environment" one of seven statements univariate estimates was statistically significant and associated to whether the managers believed that their employees would not want to work until 65 years of age or beyond and therefore included in the multivariate model, i.e. "My employees in general do not receive sufficient support from me to be able to work until ordinary retirement age". One of the four statements in the area "Work tasks stimulation, motivation, self-crediting" univariate estimates was statistically significant associated with whether the managers believed their employees would not want to work until 65 years of age or beyond, i.e. "I do not experience it being possible to adjust work tasks to elderly employees in my organisation". In the area "Competence, skills, knowledge development" one of seven statements univariate estimates was statistically significant but only one statement, "I do not experience that my employees have access to sufficient technical support", was statistically significant and included in the final model after the multivariate modelling. There were no statistically significant associations in the areas "Personal finances" and "Private social environment" to whether the managers believed their employees would not want to work until 65 years of age or beyond.

In the final multivariate model of all areas and whether the managers believed that their employees would not want to work until 65 years of age or beyond, two statements were statistically significant and associated (Table 7). The statements came from two of the nine areas. One statement came from the area "Work social environment", and one statement from the area "Work tasks stimulation, motivation, self-crediting". The strongest observed association in the multivariate model to whether the managers believed their employees would not want to work was the statement "My employees in general do not



receive sufficient support from me to be able to work until ordinary retirement age”, followed by “In my experience it is hard to find work tasks to relocate employees who experience their work environment as too physically demanding”.

## **Measure activities to enable employees being able to work until 65 years of age or beyond**

In the next step the 28 possible measure activities were analysed in association to managers’ belief that their employees want to work until 65 years of age or beyond. The different measure activities were related to eight of the nine determinant areas, i.e. no measure activities related to the area “Private social environment”. The highest statistically significant corresponding odds ratio (OR) was that of measure activities in the area “Work schedule, work pace, recovery”, i.e. “Decrease of work pace” and “Increased time for recuperation between work shifts” in association to managers’ beliefs that their employees want to work until 65 years of age or beyond. Also the measure activity in the area “Work tasks stimulation, motivation, self-crediting” i.e. “Other work tasks in the workplace when needed”, was statistically significant and associated to whether managers believe that their employees want to work until 65 years of age and beyond.

## **Discussion**

This study indicates that there is a difference between factors associated to whether managers believe that their employees ‘can work’ and ‘want to work’ in an extended working life. A larger proportion of managers believed their employees would be able work compared to wanting to work until age 65 or beyond. Additionally, a larger proportion of managers themselves believed that they ‘can work’ rather than that they ‘want to’ work until age 65 or beyond. The nine determinant areas chosen to cover the field of factors associated to an extended and sustainable working life were based on the swAge-model (8). All nine areas in the analysis has been identified in previous studies as very important to retirement and retirement planning (1, 7–36). The investigation analysis regarding which of the nine determinant areas was mostly important to whether managers believed their employees can and want to work in an extended working life. The multivariate model stated that three of these areas were statistically significant and specially associated with mangers’ belief whether their employees could not work until 65 years or beyond, i.e. “health, diagnoses, function variation”, “physical work environment” and “competence, skills, knowledge development”. The results of the multivariate model also stated that two of these areas were statistically significant and specially associated with mangers’ belief whether their employees would not want to work until 65 years or beyond, i.e. “work social environment” and “work task stimulation, motivation, self-crediting”. These results stated the robustness of the earlier studies and theory of those determinant areas being related to whether individuals can work respectively want to work in an extended working life (Nilsson et al, 2011; Nilsson 2016).

The study design seems to be cross sectional, but is actually the baseline measurement in a longitudinal study regarding factors effecting an extended working life. The questionnaire was sent out after a review of the theoretical basis in the area, the swAge-model (7–10), and the majority of the statements in the questionnaire have previously been validated and used in a previous study (29). Although the municipal community included in the study was the eighth largest in Sweden with 456 managers of participation identified to the study, a potential weakness was that 46,4% of the managers in the original study population did not participate. However, the participation rate was 54.6%, compared to other studies this was an expected and normal participation rate of surveys. In the Swedish municipality studied there are mostly female employees, which corresponded with that most of study population and the respondents were women.

The attitude towards working until an older age has changed in the last years in Sweden. A larger proportion of Swedish municipality managers in this 2018 survey, compared to a survey with Swedish municipality managers in 2007, believed that they themselves could work until 66 years of age or beyond. More specifically, in year 2007 64,5% of the managers stated that they could work until 55–65 years of age and 35,5% to 66 years of age or beyond compared to 2018 when 36,9% stated they could work until 55–65 years of age and 63,1% until 66 years of age or beyond (40, 41). Additionally, a larger proportion of managers in 2018 want to work until an older age than in 2007, i.e. in year 2007 85,5% wanted to work until 55–65 years of age and 14,6% until 66 years of age or beyond, compared to 2018 when 80,7% until 55–65 years of age and 19,3% until 66 years of age and beyond (40, 41). In this study, the managers' attitude towards when individuals were elderly employees was in mean 60 years of age, both for male and female employees. However, in another Swedish study with 905 municipality managers, it emerged that the managers on average considered both their male and female employees to be elderly employees at age 59 (29). In a study from the UK, managers defined their female employees as elderly employees from 48 years of age, while male employees were listed as older employees from 51 years of age (42).

This study analyses which of the nine determinant areas was mostly important to whether managers believed their employees would be able to and would want to work in an extended working life. Individuals health situation, i.e. the area “Self-rated health, diagnoses and function variation”, is very important to whether individuals can participate in working life at all (1, 7–12). In the univariate estimates the determinant area “Health, diagnoses and function variation” was statistically significant to whether managers believed their employees could not work in an extended working life. However, in this study the managers related to their employees who were a part of working life at the moment, and most of the managers (93%) believed their employees to have a good well-being and health status in their daily lives. Therefore, the good health situation among employees in this study has an effect on the final model of factors related to whether managers believe their employees could work until 65 years of age or beyond. Still, in other work places the health status among employees could have a greater effect as determinant area to whether an individual could work until an older age or not.

The determinant area “Physical work environment” was statistically significant both in the univariate and in the final multivariate model of all nine areas associated with whether managers believe their

employees could work until 65 years of age and beyond. Earlier studies states the physical work environment to have an effect on an individual's health, withdrawal from working life and that a demanding physical work environment could rapidly increase biological ageing (1, 7–9, 13–15). The analysis of measures in this study stated that the most important measures associated with whether managers believe they could enable employees to work in an extended working life, i.e. the highest statistically significant OR, were measures in the area “Physical work environment”, to decrease the physical demands and to rotate between different work tasks to decrease strain and physical demand.

The determinant area “Mental work environment” in this study was in the univariate model statistically significant related to whether managers believed their employees would not want to work until an older age. Earlier studies states the mental work environment and balance between demand and control in the work situation to be very important to work related stress (43). Additionally, the mental work environment has been stated as important to the employees’ own attitudes towards an extended working life (1, 7–9, 16–18). In the analysis of managers’ belief in different measures to increase employees ability to work until 65 years of age or beyond in this study, the determinant area “Mental work environment” was statistically significant to whether managers believed their employees could work in an extended working life, i.e. measures to decrease the mental demands in the work situation and measures to promote rotation between different work tasks to decrease the strain of mental demands.

The determinant area “Work schedule, work pace and recuperation” in the univariate model in this study was statistically significant and related to whether managers believed their employees did not want to work until an older age. Measures in work schedules to decrease working hours with an older age may affect the extension of working life to an older age according to previous studies (1, 7–9, 19–21). Measures to decrease the work pace and measures to increase the possibility of recuperation between the work shifts were also the most important, i.e. with the highest statistically significant OR, regarding what the managers believed could increase the employees’ possibility of wanting to work until 65 years of age or beyond in this study.

The determinant area “Financial incentives” are previously well-known factors to pull and push older workers to retirement or to an extended working life (1, 7–9, 22–24). Compared to the other determinant areas examined in this study, financial incentives were statistically significant to whether managers believed their employees could work until an older age. In spite of this, financial incentives were not statistically significant to whether the managers believed their employees could not or did not want to work until 65 years of age or beyond in the final models.

The determinant area “Private social environment” was not statistically significant in the univariate estimates regarding factors associated to what manages believe would effect whether their employees could not and did not want to work in an extended working life, or in the multivariate model with all the determinant areas. However, studies with employees’ own attitudes towards an extended working life stated that factors regarding private life, such as when a partner retires, is important to the individual decision whether to work in an extended working life or not (1, 7–9, 18, 25–27). This indicated that the

managers most probably focus on the work situation and not as much on the fact that employees also have a life beside the work life that influence whether they can and want to work.

The determinant area “Work social environment” was statistically significant in the univariate estimates to both whether the managers believe their employees cannot and do not want to work in an extended working life. However, it was only statistically significant to whether managers believe their employees would not want to work until 65 years of age, and not to whether they believe their employees would be able to work, in the multivariate models of all the determinant areas. Actually, whether the employees did not receive enough support from their managers was the most important, i.e. the highest statistically significant OR, in the multivariate model of all determinant areas to whether the managers believe their employees would not want to work in an extended working life. The manager has got a very important role and decision power regarding measures, norms and strategies in the workplace and to enable individual employees to work in an extended working life (1, 7–9, 18, 28–30). It is therefore important that the managers’ attitudes towards elderly employees is positive, if society wants more people to get a chance to stay in working life until an older age due to the demographic development where more elderly people need to earn a living.

The determinant area “Work tasks, stimulation, motivation, self-crediting” was statistically significant in the univariate estimates to whether the managers believed their employees both would not be able to and would not want to work until 65 years of age and beyond. This determinant area was also statistically significant to whether the managers believed their employees would not want to work in an extended working life in the multivariate model of all the determinant areas. Additionally, the measure to arrange other work task in the work place for the employee when necessary was highly associated, i.e. high statistically significant OR, to that the manager believed their employees would increase their ability to both being able to and wanting to work in an extended working life. Individuals need activities, according to previous studies motivating and simulating tasks has an impact on employees to increase their participation in an extended working life (1, 7–9, 31–33). Possibilities of changing work tasks if necessary is also important for an ongoing employability until an older age.

Statements in the determinant area “Competence, skills, knowledge development” was statistically significant in the univariate estimates to both whether managers believe their employees would not be able to and would not want to work until 65 years of or beyond. The area was also statistically significant in the multivariate model of all the determinant areas and whether managers believe their employees would not be able to work in an extended working life. If the managers’ attitudes and experiences were that they need the competence of elderly employees and additionally to arrange knowledge and competence development in a way that fit the elderly employees cognitive ageing, the elderly employees increase their willingness and skills to keep working in an extended working life (1, 7–9, 34–36). However, in this study the managers do not seem to regard competence as a measure to increase the employees possibility of an extended working life, i.e. there was no statistically significant association between the managers’ attitudes towards the employees abilities and the competence measures to increase employees’ participation in an extended working life.

One strength of this study was the possibility to examine differences between determinant areas and whether managers believe their employees can and want to extend their working life beyond 65 years of age. All nine areas in the analysis is in the swAge-model and has been identified in previous studies as very important to retirement and retirement planning (1, 7–36), but all areas has not been included in the same study about managers' attitude towards their employees possibility of working in an extended working life before. Furthermore, to the best of our knowledge, previous studies has made no distinction between whether managers believe their employees 'can' or 'want to' work in an extended working life.

## Conclusion

Work is an important part of an individuals' life. The demographic change in most societies affects human resources planning and working life in the future. The attitude of managers toward employees' situations and abilities is of great importance in the employee's decision to extend or withdraw from working life. The results in this study show that health, physical work environment, skills and competence were particularly important areas to whether managers believe that their employees can work until 65 years of age or beyond. Measures at the workplace to increase the employee's opportunity of being able to work in an extended working life were decrease of demands, more rotation between different tasks to reduce work load and wear and to offer other tasks in the workplace if needed. The results also stated that the social work environment, whether the employees received enough support from the managers, and the possibility of arranging relocation if the employees experienced that the work environment was too demanding for them, were the most important to whether the managers believe that their employees want to work until age 65 or beyond. Measures in the workplace to increase the opportunity of employees wanting to work in an extended working life were decrease of work pace, reduction of working hours (i.e. increased leisure time between shifts) and to offer the employee other tasks in the workplace if needed. Actually, measures to offer the employee other tasks in the workplace if needed was both important to whether the managers believed their employees could and want to go on and work in extended working life. However, if that is a realistic measure in a workplace and an organisation is not possible to state in this study.

The result from this study regarding managers' perspectives on whether their employees 'can' and 'want' to work until an older age will hopefully make a contribution to the understanding of the extended working life process. The results also proves a robustness of the determinant areas of knowledge in the swAge-model. Additionally, the study's contribution to the knowledge regarding measures for an extended working life can hopefully also be important in workplace intervention planning and future research for a sustainable working life until an older age.

## Abbreviations

CI

confidence interval  
OR  
odds ratio  
P  
probability value  
swAge  
Sustaniable working life for all ages

## Declarations

*Ethics approval and consent to participate:* The study was conducted according to the ethical codes and principles expressed in the Declaration of Helsinki, and was approved by The Regional Ethical Review Board in Lund (no 2018/27). Consent to participate was collected from the participants in the survey.

*Consent to publish:* Consent for publication of the result was collected from the participants in the survey.

*Availability of data and materials:* The datasets analysed during the current study available from the corresponding author on reasonable request.

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## Tables

**Table 1.** Proportion (%) of respondents who believe their employees can work until the age of 55-60; 61-62; 63-64; 65; 66-67; 68-69; 70 years of age or beyond.

Age (years) to which respondents believe their employees can work						
55 - 60	61-62	63 - 64	65	66-67	68-69	≥70
2,0%	8,4%	12,0%	32,5%	34,5%	6,4%	4,0%

**Table 2.** Proportion (%) of respondents who believe their employees want to work until the age of 55-60; 61-62; 63-64; 65; 66-67; 68-69; 70 years of age or beyond.

Age (years) to which respondents believe their employees can work						
55 - 60	61-62	63 - 64	65	66-67	68-69	≥70
5,6%	12,0%	24,1%	30,9%	24,9%	1,6%	0,8%

**Table 3.** Distributions regarding whether the manager believe their employees' 'can work' outcome for the statements included in the univariate and final multivariate model in the determinant areas, and the corresponding odds ratios (OR), significant value (P) and 95% confidence intervals (CI) obtained from logistic regression. ORs indicate the statements relation to the managers' belief whether their employees' can work until 65 years of age or beyond.

Determinant sphere	Determinant areas	Statement	Univariate estimates			Multivariate model of can work $\geq 65$ in the deterrent area		
			OR	P	95% CI	OR	P	95% CI
The work environments health effect	Health, diagnoses, function variations	The majority of my employees do not seem to experience well-being in their daily life	4.381	0.006*	1.51-12.68	4.238	0.009*	1.43-12.57
		The majority of my employees have some kind of diagnosis or chronic disease	3.035	0.005*	1.41-6.54	3.126	0.005*	1.42-6.89
	Physical work environment	I experience that my employees in general have many tasks involving a physically demanding work load and heavy lifting	7.014	<0.001*	3.05-16.15	5.366	<0.001**	2.239-12.860
		I do not experience that my employees have a reasonable physical work load	7.130	<0.001*	2.65-19.16	4.719	0.004*	1.632-13.644
		I experience that my employees in general run the risk of occupational injury and occupational disease based on the physical work environment	4.332	0.004*	1.59-11.84			
		I experience that my employees in general have many physically unilateral work tasks	2.090	0.049*	1.00-4.35			
		I do not experience that there is sufficient ergonomic support and aids for my employees work	1.632	0.341	0.60-4.48			
		I do not experience that my employees in general are good at using ergonomic support and aids	1.063	0.87	0.51-2.20			
	Mental work Environment	I do not experience that there is a general balance between the demands put on my employees in their work, and the control they have in executing their work tasks	1.813	0.115	0.865-3.800			
		I experience that my employees run the risk of being subjected to violence and threats in their work	1.368	0.319	0.739-2.535			
		I experience that my employees in general run the risk of occupational injury and occupational disease based on the mental work environment	1.338	0.404	0.675-2.655			
		I experience that my employees in general are too stressed in their work due to current circumstances in the work place	1.306	0.408	0.694-2.461			
		I experience that my employees in general are too stressed in their work due to political decisions and circumstances in society	1.225	0.507	0.672-2.233			
	Work schedule, work	I do not experience that my employees	2.066	0.059	0.972-	2.066	0.059	0.972-

	pace and recuperation	in general have sufficient opportunity of taking breaks when working			4.390			4.390
		I do not experience that my employees in general have a good work schedule that enables recuperation between work shifts"	2.003	0.118	0.838-4.784			
		I experience that it can be a problem to keep the work activities running due to lack of temp workers when employees are off work	1.276	0.431	0.696-2.341			
		I experience that my employees in general have too many work tasks due to lack of employees	1.239	0.528	0.636-2.415			
Finances	Personal finances	I experience that my employees in general feel pressured by their financial situation (i.e. having difficulty getting by on their salary, health insurance and/or other social security systems)	3.269	<0.001**	1.619-6.601	3.269	<0.001**	1.619-6.601
Support and community	Privatsocialenvironment	I do not experience that my employees in general have sufficient opportunity of combining work with their leisure activities and social relations in their leisure time.	2.472	0.062	0.956-6.390	2.472	0.062	0.956-6.390
		I do not experience that my employees in general have sufficient opportunity of combining work with their family situation, partner, children, grandchildren etc.	1.964	0.205	0.692-5.572			
	Work social environment	My employees in general do not receive sufficient support from me to be able to work until ordinary retirement age	5.451	0.005*	1.656-17.946	4.158	0.023*	1.212-14.268
		I am not satisfied with the extent of support that I offer my employees for them to be able to cope with their work tasks	2.415	0.017*	1.169-4.989	2.290	0.035*	1.060-4.948
		I do not experience that my employees in general receive sufficient support to be able to cope with their work tasks from their co-workers, others in the organization and supporting organizations	1.833	0.190	0.740-4.540			
		I am not satisfied with the quality of the support that I offer my employees for them to be able to cope with their work tasks	1.652	0.333	0.598-4.568			
		I experience that my elderly employees are subjected to discrimination/disregard by others in the workplace (co-workers, patients, clients etc.)	2.115	0.488	0.255-17.569			
		I do not experience that my employees	1.150	0.780	0.433-			

		in general have reasonable opportunity of participation in decisions regarding work organisation			3.054			
		I do not experience leadership to be crucial for elderly employees consideration to keep working after 65 years of age	1.016	0.960	0.558-1.849			
Execution of work tasks	Work tasks stimulation, motivation, self-crediting	I do not experience it being possible to adjust work tasks to elderly employees in my organization	3.900	<0.001**	2.053-7.408	3.900	<0.001**	2.053-7.408
		In my experience it is hard to find work tasks to relocate employees who experience their work environment as too physically demanding	2.621	0.004*	1.36-5.05			
		In my experience it is hard to find work tasks to relocate employees who experience their work environment as too mentally demanding	2.230	0.030	1.081-4.600			
		I do not experience that my employees in general have reasonable opportunity of participation in decisions regarding their work tasks	3.720	0.070	0.899-15.400			
		I do not experience that my employees in general are satisfied in their daily work	2.400	0.086	0.883-6.520			
		I do not experience that my employees in general have work tasks that they experience as stimulating and meaningful	2.302	0.368	0.375-14.138			
	Knowledge, competence	I do not experience that my employees have access to sufficient technical support	3.468	0.003*	1.547-7.772	3.539	0.003*	1.557-8.043
		I do not experience it being important to keep elderly employees in the organization based on their competence	2.322	0.022*	1.128-4.778	2.497	0.016	1.188-5.25
		I do not experience that my elderly employees have the right knowledge and experience for their work tasks	2.536	0.035*	1.069-6.015			
		I do not experience that my elderly employees in general have opportunity of continuous competence development	2.131	0.132	0.796-5.702			
		I do not experience that my elderly employees in general have the knowledge and experience that enable them to find a job in the eventuality of re-organization and changes	1.469	0.220	0.795-2.713			
		I do not experience that my employees	1.741	0.653	0.155-			

		in general have work tasks where they feel they can use their skills and knowledge			19.565			
		I do not experience that my employees in general have knowledge and experience that enables them to be reallocated in our organization	1.055	0.860	0.581-1.915			

**Table 4.** The final multivariate model distributions regarding all the determinant areas combined and whether the manager believe their employees' 'can work' outcome for the statements. The corresponding odds ratios (OR), significant value (P) and 95% confidence intervals (CI) obtained from logistic regression. ORs in the multivariate model indicate the statements' relation to the managers' belief whether their employees' can work until 65 years of age or beyond.

Determinant sphere	Determinant areas	Statement	Multivariate model in the determinant area		
			OR	P	95% CI
The work environments health effect	Health, diagnoses, function variations	The majority of my employees have some kind of diagnosis or chronic disease	2.725	0.033*	1.086-6.841
	Physical work environment	I experience that my employees in general have many tasks involving a physically demanding work load and heavy lifting	4.660	0.002*	1.779-12.209
		I do not experience that my employees have a reasonable physical work load	4.832	0.008*	1.526-15.361
	Mental work environment	-			
	Work schedule, work pace and recovery	-			
Finances	Personal finances	-			
Support and community	Private social environment	-			
	Work social environment	-			
Execution of work tasks	Work tasks stimulation, motivation, self-crediting	-			
	Competence, skills, knowledge development	I do not experience that my employees have access to sufficient technical support	2.834	0.030*	1.109-7.244
		I do not experience it being important to keep elderly employees in the organization based on their competence	3.572	0.002*	1.603-7960

**Table 5.** Measure statements associated to whether the manager believe their employees’ “can work” outcome for the statements. The corresponding odds ratios (OR), significant value (P) and 95% confidence intervals (CI) obtained from logistic regression. ORs in the univariate estimates indicate different measures in relation to the managers’ belief that their employees’ can work until 65 years of age or beyond.

Determinant sphere	Determinant areas	Measures to increase employees' ability to work until 65 years of age or longer	OR	P	95% CI
The work environments health effect	Health, diagnoses, function variations	Compulsory exercise/health care to keep employees in mental and physical shape until an older age	1.190	0.567	0.656-2.161
	Physical work environment	Decrease of physical work demands	2.885	0.001**	1.568-5.310
		Rotation between different work tasks to decrease physical work load and strain	2.128	0.019	1.132-4.002
	Mental work environment	Rotation between different work tasks to decrease mental work load and strain	1.881	0.040	1.030-3.433
		Decrease of mental work demands	1.823	0.051*	0.997-3.333
		Increased self-monitoring of work	1.355	0.322	0.742-2.475
	Work schedule, work pace and recuperation	Change in the organization of work hours	1.806	0.069	0.955-3.412
		Increased time for recuperation between work shifts	1.755	0.071	0.952-3.231
		Shorter working hours	1.952	0.188	0.721-5.282
		Being able to take breaks when needed	1.302	0.402	17.02-2.412
		Decrease of work pace	1.106	0.772	0.559-2.191
Economics	Personal finances	Higher salary	1.050	0.881	0.555-1.988
		Decreased pension to keep employees from retiring too early	1.372	0.404	0.653-2.883
Support and community	Private social environment	-			
	Work social environment	Increased participation in work	1.233	0.497	0.674-2.255
		Increased well-being and unity	1.174	0.615	0.629-2.192
Execution of work tasks	Work tasks stimulation, motivation, self-crediting	Other work tasks in the work place when needed	2.230	0.015*	1.170-4.251
		Increased opportunity of development at work	1.584	0.132	0.871-2.879
		Increased work satisfaction	1.583	0.144	0.857-2.925
		Increased opportunity of changing occupation and career at an older age	1.242	0.480	0.681-2.264
		That employees in increased extent can focus on work tasks that they themselves experience as being the most important and interesting in their work	1.224	0.508	0.673-2.227
		New job within their occupational area	1.157	0.683	0.575-2.327



		Increased career opportunities	1.133	0.695	0.606-2.119
		Rotation between different work tasks and activities to increase stimulation	1.097	0.766	0.598-2.010
	Competence, skills, knowledge development	Through, for the work place, need-oriented competence development	1.190	0.571	0.653-2.167
		Through, for the employee, need-oriented competence development	1.130	0.690	0.621-2.054
		Opportunity of new knowledge	1.025	0.936	0.563-1.864

**Table 6.** Distributions regarding whether the manager believe their employees' 'want to work' outcome for the statements included in the univariate and final multivariate model of the determinant areas, and the corresponding odds ratios (OR), significant value (P) and 95% confidence intervals (CI) obtained from logistic regression. ORs indicate the statements' relation to whether the managers believe their employees' can work until 65 years of age or beyond.

Determinant sphere	Determinant areas	Statement	Univariate estimates			Multivariate model of can work $\geq 65$ in the determent area		
			OR	P	95% CI	OR	P	95% CI
The work environments health effect	Health, diagnoses, function variations	The majority of my employees seem to experience well-being in their daily life	2.989	0.052	0.990-9.027	2.989	0.052	0.990-9.027
		The majority of my employees have some kind of diagnosis or chronic disease	1.563	0.234	0.750-3.260			
	Physical work environment	I experience that my employees in general run the risk of occupational injury and occupational disease based on the physical work environment	2.661	0.062	0.951-7.448			
		I experience that my employees in general have many tasks involving a physically demanding work load and heavy lifting	1.744	0.168	0.791-3.847			
		I do not experience that my employees in general have a reasonable physical work load	1.601	0.326	0.626-4.093			
		I do not experience that my employees in general are good at using ergonomic support and aids	1.289	0.422	0.694-2.394			
		I experience that my employees in general have many physically unilateral work tasks	1.303	0.445	0.660-2.573			
		I do not experience that there is sufficient ergonomic support and aids for my employees work	1.192	0.709	0.475-2.990			
	Mental work environment	I do not experience that there is a general balance between the demands put on my employees in their work, and the control they have in executing their work tasks	2.054	0.037	1.043-4.045	2.054	0.037	1.043-4.045
		I experience that my employees in general are too stressed in their work due to political decisions and circumstances in society	1.601	0.070	0.963-2.664			
		I experience that my employees in general run the risk of occupational injury and occupational disease based on the mental work environment	1.698	0.083	0.932-3.093			
		I experience that my employees in general are too stressed in their work due to current circumstances in the work place	1.362	0.245	0.809-2.291			
		I experience that my employees run the risk of being subjected to violence and threats in their work	1.112	0.699	0.649-1.905			
	Work schedule, work pace and recuperation	I do not experience that my employees in general have sufficient opportunity of taking breaks when working	2.376	0.017	1.164-4.851	2.376	0.017	1.164-4.851
		I do not experience that my employees in general have a good work schedule that enables recuperation between work shifts	2.493	0.032	1.081-5.747			

		I experience that it can be a problem to keep the work activities running due to lack of temp workers when employees are off work	1.157	0.574	0.696-1.922			
		I experience that my employees in general have too many work tasks due to lack of employees	1.037	0.902	0.583-1.845			
Finances	Personal finances	I experience that my employees in general feel pressured by their financial situation (i.e. having difficulty getting by on their salary, health insurance and/or other social security systems)	1.140	0.698	0.588-2.213			
Support and community	Private social environment	I do not experience that my employees in general have sufficient opportunity of combining work with their leisure activities and social relations in their leisure time.	2.225	0.093	0.875-5.658			
		I do not experience that my employees in general have sufficient opportunity of combining work with their family situation, partner, children, grandchildren etc.	2.067	0.155	0.760-5.624			
	Work social environment	<b>My employees in general do not receive sufficient support from me to be able to work until ordinary retirement age</b>	<b>4.582</b>	<b>0.025</b>	<b>1.208-17.380</b>	<b>4.582</b>	<b>0.025</b>	<b>1.208-17.380</b>
		I am not satisfied with the extent of support that I offer my employees for them to be able to cope with their work tasks	1.671	0.136	0.846-3.300			
		I do not experience that my employees in general receive sufficient support to be able to cope with their work tasks from their co-workers, others in the organization and supporting organizations	1.462	0.378	0.629-3.397			
		I am not satisfied with the quality of the support that I offer my employees for them to be able to cope with their work tasks	1.237	0.666	0.470-3.259			
		I experience that my elderly employees are subjected to discrimination/disregard by others in the workplace (co-workers, patients, clients etc.)	1.394	0.644	0.340-5.708			
		I do not experience that my employees in general have reasonable opportunity of participation in decisions regarding work organization	1.460	0.404	0.600-3.557			
		I do not experience leadership to be crucial for elderly employees consideration to keep working after 65 years of age	1.417	0.181	0.851-2.359			
Execution of work tasks	Work tasks stimulation, motivation, self-crediting	<b>In my experience it is hard to find work tasks to relocate employees who experience their work environment as too physically demanding</b>	<b>2.836</b>	<b>&lt;0.001</b>	<b>1.657-4.855</b>	<b>2.836</b>	<b>&lt;0.001</b>	<b>1.657-4.855</b>
		<b>I do not experience it being possible to adjust work tasks to elderly employees in my organization</b>	<b>1.867</b>	<b>0.017</b>	<b>1.116-3.123</b>			
		In my experience it is hard to find work tasks to relocate employees who experience their work environment as too mentally demanding	1.721	0.057	0.983-3.013			
		I do not experience that my employees in general	1.204	0.802	0.281-			

	have reasonable opportunity of participation in decisions regarding their work tasks			5.158			
	I do not experience that my employees in general are satisfied in their daily work	1.861	0.208	0.708-4.893			
	I do not experience that my employees in general have work tasks that they experience as stimulating and meaningful	2.226	0.386	0.365-13.577			
Competence, skills, knowledge development	<b>I do not experience that my employees have access to sufficient technical support</b>	<b>2.622</b>	<b>0.018</b>	<b>1.180-5.828</b>	<b>2.622</b>	<b>0.018</b>	<b>1.180-5.828</b>
	I do not experience it being important to keep elderly employees in the organization based on their competence	1.588	0.178	0.810-3.112			
	I do not experience that my elderly employees have the right knowledge and experience for their work tasks	1.853	0.147	0.805-4.266			
	I do not experience that my elderly employees in general have opportunity of continuous competence development	1.584	0.337	0.620-4.048			
	I do not experience that my elderly employees in general have the knowledge and experience that enable them to find a job in the eventuality of re-organization and changes	1.128	0.654	0.665-1.914			
	I do not experience that my employees in general have work tasks where they feel they can use their skills and knowledge	2.792	0.404	0.250-31.212			
	I do not experience that my employees in general have knowledge and experience that enables them to be reallocated in our organization	1.040	0.878	0.627-1.726			

**Table 7.** The final multivariate model distributions regarding all the determinant areas combined and whether the managers believe their employees' 'want to work' outcome for the statements. The corresponding odds ratios (OR), significant value (P) and 95% confidence intervals (CI) obtained from logistic regression. ORs in the multivariate model indicate the statements relation to whether the managers believe their employees' want to work until 65 years of age or beyond.

Determinant sphere	Determinant areas	Statement	Multivariate model in the determent area		
			OR	P	95% CI
The work environments health effect	Health, diagnoses, function variations	-			
	Physical work environment	-			
	Mental work environment	-			
	Work schedule, work pace and recuperation	-			
Finances	Personal finances	-			
Support and community	Private social environment	-			
	Work social environment	My employees in general do not receive sufficient support from me to be able to work until ordinary retirement age	4.972	0.022	1.263-19.574
Execution of work tasks	Work tasks stimulation, motivation, self-crediting	In my experience it is hard to find work tasks to relocate employees who experience their work environment as too physically demanding	2.812	<0.001	1.621-4.872
	Competence, skills, knowledge development	-			

**Table 8.** Measure statements associated to the managers' belief that their employees 'want to work' outcome for the statements. The corresponding odds ratios (OR), significant value (P) and 95% confidence intervals (CI) obtained from logistic regression. ORs in the univariate estimates indicate different measures in relation to the managers' belief that their employees want to work until 65 years of age or beyond.

Determinant sphere	Determinant areas	Measures to increase employees' ability so they want to work for 65 years or longer	OR	P	95% CI
The work environments health effect	Health, diagnoses, function variations	Compulsory exercise/health care to keep employees in mental and physical shape until an older age	1.285	0.330	0.776-2.129
	Physical work environment	Decrease of physical work demands	1.541	0.103	0.917-2.592
		Rotation between different work tasks to decrease physical work load and strain	1.089	0.768	0.618-1.918
	Mental work environment	Decrease of mental work demands	1.562	0.085	0.941-2.593
		Increased self-monitoring of work	1.372	0.235	0.814-2.311
		Rotation between different work tasks to decrease mental work load and strain	1.261	0.380	0.752-2.115
	Work schedule, work pace and recuperation	Decrease of work pace	2.147	0.014	1.169-3.936
		Increased time for recuperation between work shifts	1.719	0.037	1.032-2.862
		Shorter working hours	1.761	0.144	0.824-3.763
		Being able to take breaks when needed	1.431	0.176	0.852-2.402
		Change in the organization of work hours	1.372	0.230	0.819-2.300
Finances	Personal finances	Higher salary	1.677	0.070	0.956-2.933
		Decreased pension to keep employees from retiring too early	1.171	0.643	0.601-2.282
Support and community	Private social environment	-			
	Work social environment	Increased well-being and unity	1.611	0.089	0.930-2.788
		Increased participation at work	1.473	0.147	0.873-2.485
Execution of work tasks	Work tasks stimulation, motivation, self-crediting	Increased work satisfaction	1.379	0.246	0.801-2.374
		Other work tasks in the work place when needed	1.284	0.338	0.770-2.141
		Increased opportunity of development at work	1.249	0.391	0.752-2.077
		Increased opportunity of changing occupation and career at an older age	1.212	0.461	0.726-2.023
		Increased career opportunities	1.205	0.489	0.711-2.041
		That employees in increased extent can focus on work tasks that they themselves experience as being the most important and interesting in their work	1.166	0.555	0.700-1.944

		New job within their occupational area	1.158	0.618	0.651-2.061
		Rotation between different work tasks and activities to increase stimulation	1.077	0.779	0.643-1.802
	Competence, skills, knowledge development	Through, for the employee, need-oriented competence development	1.315	0.288	0.794-2.180
		Opportunity of new knowledge	1.139	0.615	0.685-1.894
		Through, for the work place, need-oriented competence development	1.066	0.803	0.644-1.767