

“Healthy Workplaces for all Ages” - Age related changes and Occupational Health and Safety

C. M. Varianou, O. Nicolaidou*, G. Boustras

Center for Risk, Safety and the Environment (CERISE), European University Cyprus

**Board Member of Cyprus Safety and Health Association (CySHA)*

ABSTRACT: In the last decades, humanity experiences an increasing demographic change. Ageing of the population is directly connected with ageing of the workforce. The proportion of older people is growing, while fewer young people enter the labour market. This paper seeks to identify the possible relationships between age, work and Occupational Health and Safety (OHS) in the workforce of Cyprus. Some of the main elements of the ageing management have been used to enhance the Plan – Do – Check – Act (P-D-C-A) approach of an Occupational Health and Safety Management System (OHSMS). A nationwide study, was conducted by the Cyprus Safety and Health Association (CySHA) with the collaboration of the Department of Labour Inspection (DLI) of the Republic of Cyprus. A quantitative tool in the form of a structured questionnaire was used. The questionnaire was given to employers in accordance with the “Healthy Workplaces for all Ages” campaign of the European Agency of Health and Safety at Work. The aim of the campaign “Healthy Workplaces for all Ages” is to keep welcoming young workers but at the same time, protect older workers and suggest adaptation measures if necessary. Strategies to minimise age related issues and increase awareness should be designed and adopted at the early stages of working life and continue until retirement. This is a win – win situation where, by reducing risk factors of employees, the rate of occupational accidents and occupational diseases decreases thus, lowering costs for employers. The study aims to understand among others: whether employers consider worker’s age when they conduct a Risk Assessment (RA); the level of employers awareness of the changes that older workers are facing and whether they are willing to take action; and whether companies have a recovery plan when an older worker is back to work after a long sick leave due to an occupational disease, etc.

Keywords: ageing, risk assessment, occupational accidents, occupational diseases, adaptation measures

1 INTRODUCTION

The last decades have shown an increasing demographic change. Ageing of the population is directly related with ageing of the workforce with 55% of the world’s governments consider this as a major concern (UN, 2013). The proportion of older people is growing, while fewer young people are entering the labour force. As a result of that, there have been changes to the employment rate of those aged 55-64 years. Many EU countries have increased the official retirement age to 65+ for both men and women, while others are in the process of increasing the retirement age even further (EU-OSHA, 2016). Special attention must be taken not only to older people (above 50) but additionally into this new potential group of workers above 65 years old in order to prevent accidents and continue working in a safe environment.

Occupational health and safety should be reconsidered taking into consideration this new evaluation of

risk. For these ageing groups, the risk of occupational accidents and diseases is now even higher due to their extended exposure time to specific hazards. Older workers are at a higher risk in relation to self-reported health problems and long-term sickness absence (Niedhammer et al., 2008) while younger people claim to be more exposed to all types of risk at work. However, older workers are seen as having lower accident rates than younger workers (Benjamin and Wilson, 2005), probably due to the less dangerous work environment that they choose to work in at this age (Laflamme et al., 1996). Additionally, older workers are more at risk of fatal accidents (Grandjean et al., 2006) and take longer to recover from non-fatal serious injuries (Laflame and Menckel, 1995).

According to The Safety and Health at Work Laws of 1996 to (N.2) of 2015 (178(I) of 2015), employers have a legal duty to ensure the safety and health of their employees. This includes the identification of hazards arising from work related activities and the

evaluation of risks. There is a complex interaction between ageing, work and OHSMS. Ageing results in mental and physical changes which might affect work and OHSMS but there is a large variation between individuals. These changes affect the evaluation of risk and employers should be aware of them. A first step could be to recognize these new hazards in their safety policy and then in the whole OHSMS. However, in Cyprus there are no specific government policies to encourage SMEs to adopt safety policies (Boustras et al., 2015). The Department of Labour Inspection (DLI) with its inspectors try to set even more higher standards in order to meet EU guidelines. Population ageing and the related challenges for workplaces have not been the main priority for policy development in Cyprus according to the literature and empirical research (EU-OSHA, 2016). Cyprus was one of the countries hit by economic crisis, and efforts have been focused on reducing youth unemployment rather than dealing with population ageing challenges.

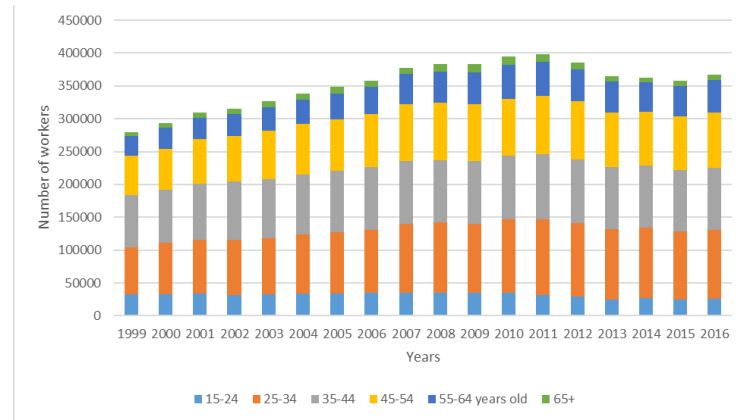
This paper illustrates the general framework of the changing workforce in Cyprus, presenting potential measures that should be taken from employers to promote sustainability across the working life. This life-course approach is the key to promoting a longer working life and healthy retirement. This paper aims to address:

- ageing workforce challenges through an OHSMS, answering questions such as whether risk assessors take into account ageing issues when they develop a RA or if companies have a recovery plan when an older worker is back to work after a long sick leave due to an occupational disease.
- basic adaptation measures to minimize risk and prevent occupational accidents
- future work recommendations that might need to be carried out based on the results of the questionnaire and a systematic literature review.

2 LITERATURE REVIEW

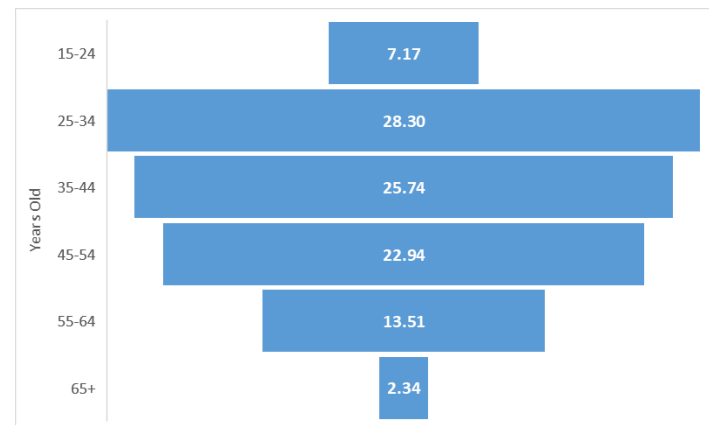
Ageing is a complex and continuous process that begins with birth and ends with death. It is a multi-dimensional process of biological, psychological and social changes (EU-OSHA, 2016). Population ageing is a major trend that has an impact on societies and economies, influencing all spheres of life. Alongside the population, the labour force is ageing. It has become one of the most important problems globally, especially in Europe (Mockus, Zukaite, 2012 from Rūta Čiutienė and Rasa Railaitė 2014). The Cyprus population is considerably younger than the average population of Europe. In 2015 the median age in the EU-28 was around 42,2 years, while in Cyprus it was 36,8 years. As it can be seen from Graph 1 and Graph 2, the employment rate among people aged 55 or over has been slightly increasing since 1999. In particular, in 1999 it was 12,61%, in

2007 it was 14,91% and in 2016 it was 15,84%. However, this age group is projected to increase slowly until 2020 and grow rapidly throughout the 2040s and 2050s (EU-OSHA, 2016). For that reason, now is the time to prepare, set policies and develop OHSMS that recognise the ageing factor, before these changes affect the workforce, society and the economy.



Graph 1: Cyprus workforce by Age groups and Years

Source: own calculation based on Statistical Service of Cyprus (2016)



Graph 2: Ageing workforce (%) in Cyprus (2016)

Source: own calculation based on Statistical Service of Cyprus (2016)

2.1 Age-related physiological and psychological changes

Changes occur with ageing. Attributes such as work experience, expertise, wisdom, strategic thinking accumulate with age. Work motivation does not necessarily decline with age – yet age may negatively affect motivation for certain tasks, such as training (CEDEFOP, 2012). According to McGregor and Gray (2002) older workers are reliable, loyal, committed to the job and willing to stay longer in the job. Of course, this depends on the job characteristics as computer experience, innovation, creativity, enthusiasm are the least typical for older workers

(Čiutienė and Railaitė, 2014). Older workers are also, less likely to adapt to new tasks (Bal et al., 2011). On the other hand, some functional capacities (mainly physical), decline as a result of the natural ageing process. (OSHA, 2016). Characteristics that may occur due to ageing are: decreased joint mobility (& the ability of people to egress buildings), loss of strength, reduced physical functional capacity, slowed decision making, attention deficits, memory deficits, visual deficits, reduced colour discrimination, less tolerance for heat/cold, hearing loss, highest risk for Musculoskeletal Disorder (MSD), slower rehabilitation from injury or disease and higher work stress. It is important to keep in mind that biological ageing is only loosely associated with person age in years. There is no 'typical' older person; some 80 year-olds have physical and mental capacities similar to many 20 year-olds (WHO, 2016). Thus, there can be considerable differences between individuals of the same age because of differences in lifestyle, nutrition, fitness, genetic predispositions, educational level, etc (European Commission, 2016).

These changes might affect in different ways different occupations. For example, changes in balance and strength might affect fire fighters and rescue personnel who work in extreme conditions, wearing heavy equipment and lifting and carrying people. These changes in balance might also affect everyone working at height. In addition, a decreased ability to judge distances and the speed of moving objects has an implication for night-driving but does not affect office workers (European Commission, 2016).

Difficult working conditions and unhealthy work environments might reduce productivity of older workers, increase their absenteeism rate and the probability of losing their jobs, encouraging them to leave the labour market early (Blanchet, 2005). Indicators such as working at speed and to tight deadlines, using mental and physical energy might affect work intensity index. According to Eurofound (2016), Cyprus has the highest work intensity index in the EU which affect the effectiveness of performing tasks. However, older workers report lower work intensity than the other age groups.

Good occupational health and safety management seeks among others to identify hazards, reduction of risk and prevent of occupational accidents and occupational diseases. This paper aims to include ageing factor in this procedure in order to have an even more effective OHSMS in the context of an ageing workforce.

2.2 Age Management as part of the P-D-C-A approach and the OHSMS

Age management is the approach that this paper aims to include in an OHSMS. According to (EU-OSHA, 2016) age management is holistic, intergenerational, life-course oriented and refers to human

resources with an explicit focus on the requirements of an ageing workforce. The main dimensions of age management are a) recruitment processes which focus on skills and experience avoiding age discrimination, b) knowledge transfer, training and life-long learning, c) career development, d) flexible working time practices, e) workplace health promotion, f) occupational safety and health management, g) job rotation, h) employment exit and the transition to retirement. These elements could be included in an OHSMS and be part of the P-D-C-A approach. According to Ilmarinen (2012), age management means that age related factors should be taken into consideration in daily management through an OHSMS. This includes work arrangements and individual work tasks, so that everybody, regardless age, feels empowered in reaching their own and corporate goals. This might be the key to productivity and work satisfaction.

3 METHODOLOGY

A nationwide study, was conducted by the Cyprus Safety and Health Association (CySHA) with the collaboration of the Department of Labour Inspection (DLI) of the Republic of Cyprus. A quantitative tool in the form of a structured questionnaire was used. The questionnaire was given to employers in accordance with the "Healthy Workplaces for all Ages" campaign of the European Agency of Health and Safety at Work. According to Babbie (2010) quantitative methods emphasise objective measurements and numerical analysis of data collected through questionnaires or surveys. The questionnaire was prepared based on theoretical findings. It has been designed in a way that will allow an analysis of all the steps of an OHSMS. The survey was carried out in Cyprus during 2016. Examination of the empirical results was based on comparative analysis. Firstly, the authors have identified the ageing process issues among older workers. Thus, ageing and physical changes were identified. The second step was the listing of the major elements of an OHSMS so that ageing and work organization factors could be identified.

The paper is based on the results of a wider study on ageing workforce challenges and management of companies/ organisations in Cyprus, on scientific literature analysis and on statistical data. The questionnaire survey that was conducted can be considered as a pilot study under this wider project. In order to guarantee a fair result, as objective as possible, the survey tool (questionnaire) was conducted among 133 companies/ organisations from several economic sectors. Initially 200 enterprises had been contacted, while 133 agreed to cooperate (with an effective response rate of 66,5%). The sample is repre-

sentative of the main economic sectors of Cyprus (Services 41%, Others 27%, Construction 13%, Manufacturing 12%). Due to lack of space not all descriptive results are reported in this paper.

Owners/managers were the only respondents of this survey and they have been chosen due to the fact that they are directly involved in health and safety issues from the management point of view in an enterprise. Questions were asked to owners/managers about the existence of an OHS risk assessment in the enterprise and if ageing is used as an extra risk factor in its development. There were also questions on the provision of training for older workers on health and safety issues, the provision of return to work plans and the existence of adaption measures etc.

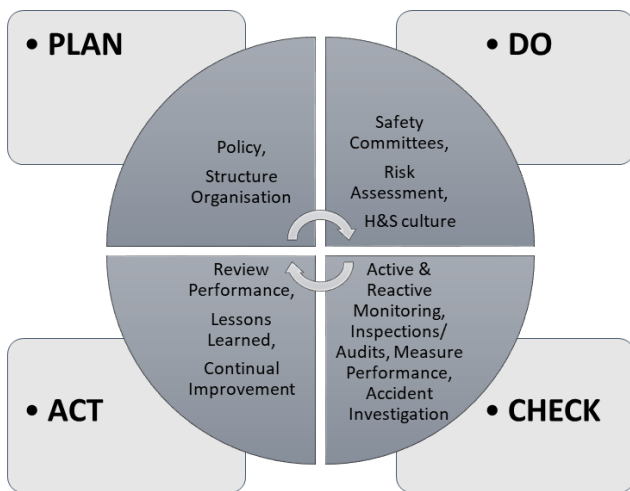


Figure 1: P-D-C-A approach with its main elements
Source: own construction based on Hughes (2016)

4 RESULTS & DISCUSSION

It should be noted that, in total, the questionnaire included 20 questions. As a result, only absolutely relevant descriptive statistics are presented in this paper and a correlation of the main variables. As mentioned before, questions were conducted based on the P-D-C-A approach, thus results below are presented in the same order:

4.1 PLAN Stage

As a first step, a descriptive analysis of the basic questionnaire's items was conducted (type of industry, number of employees etc). Respondents were from different kinds of companies/ organisations of Cyprus' labour market. This should be considered as structure of 'organisation step' in the P-D-C-A approach.

One of the first steps of an OHSMS is the development of a Health and Safety (H&S) Policy. Policies have been designed to meet legal requirements, prevent health and safety problems, and enable organisations to respond quickly where difficulties arise or

new risks are introduced (HSE, 2013). In this H&S policy, ageing issues should be considered and the commitment of the organization to be in line with legislation should specifically apply to all ageing groups.

4.2 DO stage

RA is the cornerstone of effective health and safety management and leads to a sustainable working environment. The most important thing to remember when it comes to RA is that each workplace and each worker may face unique OHS risks. Legislation does not prescribe exactly how to conduct a RA although for some specific high-risk sectors or activities coverage of certain elements/ risks can be required.

When carrying out RA, special attention should be paid to groups of workers who may be especially vulnerable. These groups are for example young workers, older workers, people with disabilities, pregnant women. Based on that, for older workers, additional risks are related to potential changes in functional capacities, while for young workers, additional risks include lack of experience. Other hazards that need to be considered specifically for older workers are ergonomic hazards (repetitive movements, manual handling, uncomfortable or static postures), shift work, noise, vibration, hot or cold environment, working at height etc.

Table 1 shows that a very high percentage of the companies surveyed (80%) have a RA which is comparable to the EU-OSHA results for European countries (77,23%). However, only 46% declared that they have considered the ageing factor on their RA. That gives an answer to one of this paper's objectives. Employers do not recognise ageing changes as an extra element in their RA.

Variable	Existence of RA		Considering age in the RA	
	Frequency	Valid percent	Frequency	Valid percent
Yes	107	80	61	46
No	26	20	72	54
Total	133	100	133	100

Table 1: Existence of RA and consideration of the ageing factor in the RA

Another question, was about participation in training. Older workers are participating in training sessions (75%) according to this questionnaire. This means that there is no discrimination, at least from the employer for older workers or/and that older workers are willing to learn. However, 59% of the Cypriots older workers consider that age discrimination exists in their workplace (EU-OSHA, 2016). The fact that ageing issues might not be addressed in a company, may mean that training methods might

not suit older workers. Training methods should be adapted to a company's and an employees's needs. It is important to train workers upon recruitment, when they are transferred or change jobs, when new technology and equipment is introduced and when new hazards have been identified (European Commission, 2016).

There was a question about the existence of mentoring programme from older workers to younger workers. The results were positive, since 64% answer that mentoring programmes do exist in their companies. These types of programmes are inexpensive and could benefit everyone. Younger employees could gain from older worker's experience and knowledge while this might increase job satisfaction and self-confidence of older workers.

4.3 CHECK stage

According to the majority of respondents, they do not keep records for health surveillance monitoring (55%). This issue needs to be addressed, particularly for part-time workers and small businesses (EU-OSHA, 2016). Health surveillance aims to detect undesired health effects. Workers who are regularly exposed to high risk substances or activities at their work, should be monitored even more often. Health surveillance and early intervention should be the aim for every employer in order to keep their workforce healthy.

Accident investigation is an important step of the 'check stage'. Accidents, incident and near misses need to be investigated in order to avoid the same mistakes in the future. It is important to check 'near-misses' that had the potential to result in injury, illness or damage but fortunately did not. For every reported major injury, there are 300 near misses (European Commission, 2016). The investigation of accidents regarding ageing is a future step for the authors.

4.4 Act stage

Many of the older workers might face health problems during their work life. The longer they are off work, the more barriers they experience in going back and the lower the likelihood of successful and lasting return to work (EU-OSHA, 2016). There must be a plan with the cooperation of the employer, the worker and maybe the healthcare services. According to this survey, 40% of the companies in Cyprus have a return-to-work/ recovery plan. EU-OSHA survey, found that in average European countries have procedures to accept employees after a long-term sickness absence (68%), while in Cyprus 49,9% reported that they have (Table 2). It is important to consider practical measures to support returning older workers. These measures could be the adaptation of the workstation or a more flexible work schedule. For example, they might need physi-

otherapy sessions or to attend medical appointments so, they should have flexible working hours.

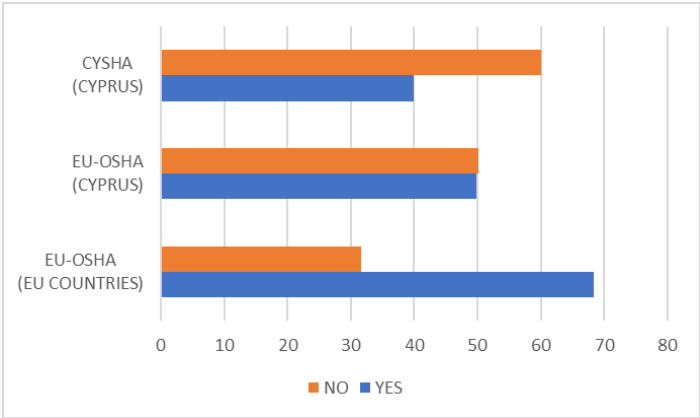


Table 2: Existence of recovery plan

Source: own calculation based on EU-OSHA (2016)

The majority of respondents (61%) have mentioned that adaptation measures to help older workers do not exist in their OHSMS, which shows that they might not be aware of the issues related to ageing. On the other hand, they are willing to allow job rotation for older workers of the company if there is a need (58%). Moreover, 83% of these employers are also willing to change someone's position due to health issues. The last two answers show that there is a will from employers to keep workers and they use adaptation measures without recognising that these might be adaptation measures to help older workers. Other examples of adapting the workplace include adapting existing equipment or providing new equipment to eliminate manual handling, repetitive movements and awkward postures. In addition, rotating tasks, adding more mini breaks, adjusting lighting and changing shift patterns to meet the needs of older workers are other examples of adaptation measures.

According to Northcott (2011) older workers might choose to leave their work early due to the changes in the pension systems. However, most of the self-employed and managers trend to continue

Variable	1	2	3	4	5	6	7	8	9	10
1. Type of organisation/ company	1									
2. Age of the organisation/ company	0.176	1								
3. Considering age in reviewing performance	0.069	0.053	1							
4. Existence of RA	0.030	0.008	-0.011	1						
5. Considering age in the RA	-0.129	-0.100	0.288	0.286	1					
6. Considering physical conditions in the RA	-0.146	-0.119	0.282	0.332	0.713	1.000				
7. Measures taken to help older workers	0.114	-0.055	0.266	0.026	0.407	0.363	1			
8. Existence of job rotation plan due to ageing	0.138	-0.062	0.231	0.094	0.327	0.156	0.246	1		
9. Job rotation due to health issues	0.047	0.019	0.187	0.355	0.247	0.294	0.191	0.358	1	
10. Existence of training for older people	-0.108	0.039	-0.002	0.167	0.144	0.188	0.175	0.074	0.166	1

Table 3: Correlation between main variables

after retirement age (Special Eurobarometer 378, 2012). In Cyprus, it seems that 16,5% choose to quit working due to health issues while in EU this proportion is 20,9% (EU-OSHA, 2016). However, there is a tend to stay at work due to the fact that most of the companies/ organisations in Cyprus are family business.

Table 3 presents some interesting correlations not directly related to the main objectives and hypothesis of this paper. There is a significant and relatively high correlation ($r=0.713$) between the variable considering of physical conditions in the RA and the considering of the factor age in the RA. This relationship, taking into account the above results of job rotation, probably indicates that employers are willing to make changes and adaptations in their RA, however they do not recognize that these changes might arise from the factor age.

Good OHSMS is important for large companies, but it is vital for SMEs. The explanation of this, relies on the fact that it is more difficult for SMEs to recover from a costly accident/ incident which may lead to the closure of the business (European Commission, 2016). OSH aspects of age management can be accommodated within the workplace RA and management process (EU-OSHA, 2016). For the aims of this study, recommendations have been made for each of the basic OHSMS steps in order to illustrate the main elements of age management through the application of an OHSMS. Figure 2 illustrates the additional patterns on the P-D-C-A approach, as a summary of all the elements that have been tested in this survey.



Figure 2: Ageing management as part of the P-D-C-A approach

5 CONCLUSION

The concept of active ageing highlights that ‘if people are to work for a longer period of time, then they will need to be in good physical and mental health, with access to more flexible working arrangements, healthy workplaces, lifelong learning and retirement schemes’ (European Union, 2012, p.37). This paper presented an analysis of ageing management issues and practices and their addition to an OHSMS through the P-D-C-A approach. The authors findings were based on literature review and in survey results. The effectiveness of potential interventions on older workers should be checked regularly. Early intervention is the key for a healthy and safe workplace. An OHSMS is based on continual improvement and this should be the aim for each and every employer: to address strategies to improve health and safety standards and develop a strong RA considering all the ageing issues. Furthermore, more knowledge and research is needed in relation to extending the working life beyond 65 years of age. Companies that don't appreciate the need to address the challenges of the

ageing workforce, may be putting their productivity and competitiveness at risk. Satisfied and healthy employees give productivity and high employment participation which results to high quality of work. Attention must be paid from the scientific community, policy-makers and business leaders to all age groups and their specific needs including ageing issues. These issues should be addressed in every OHSMS, in order to keep employees healthy through their working life and use as an advantage older workers' knowledge.

6 ACKNOWLEDGEMENT

The authors would like to thank the Board of CySHA (for conducting the questionnaire and for the provision of data) and the DLI of the Republic of Cyprus for its assistance through the process of this study.

7 REFERENCES

- Babbie, Earl R. (2010). *The Practice of Social Research* (12th ed). Belmont, CA: Wadsworth Cengage.
- Bal, A.C., Reiss, A.E., Rudolph, C.W., Baltes, B.B. (2011). Examining positive and negative perceptions of older workers: a meta-analysis. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 66, 687–698.
- Benjamin, K., and Wilson, S. (2005), "Facts and misconceptions about age, health status and employability," Health and Safety Laboratory, Buxton, Report HSL/2005/20.
- Blanchet D. (2005), "Retirement intentions, health and satisfaction at work: an European comparison", *Issues in Health Economics*, IRDES N:103.
- CEDEFOP 2012, *Working and Ageing - The benefits of investing in an ageing workforce*, Publications Office of the European Union, Luxembourg.
- Collins, M.H. et al. (2009). The older-worker-younger-supervisor dyad: a test of the reverse pygmalion effect. *Human resource development quarterly*, Vol. 20, No 1, pp. 21–41. <http://dx.doi.org/10.1002/hrdq.20006> [accessed 16.10.2012].
- Čiutienė, R. and Railaitė, R., 2014. Challenges of managing an ageing workforce. *Procedia-Social and Behavioral Sciences*, 156, pp.69-73.
- EU-OSHA 2016, , *Healthy workplaces for all ages*. Available: http://professional.eguides.osha.europa.eu/UK_en [2017, 06/12].
- Eurofound 2016, 6th European Working Conditions Survey, European Foundation for Improvement of Living and Working Conditions, Luxembourg.
- European Union (2012). *Active ageing and solidarity between generations. A statistical portrait of the European Union 2012*.
- Grandjean, C., McMullen, P., Miller, K., Howie, W., Ryan, K., Myers, A. and Dutton, R. (2006), "Severe occupational injuries among older workers: Demographic factors, time of injury, place and mechanism of injury, length of stay, and cost data," *Nursing & Health Sciences*, 8(2): 103-107.
- Hedge, J., Borman, W., & e Lammlein, S. (2006). *The aging work-force: Realities, myths, and implications for organizations*. Washington, DC: American Psychological Association.
- HSE 2013, *Leading health and safety at work*, HSE, UK.
- Hughes P., E.F. 2016, *Introduction to Health and Safety at Work*, 6th edn, Routledge, New York.
- Ilmarinen, J. (2012). *Promoting active ageing in the workplace*. European Agency for Safety and Health at Work.
- McGregor, J., Gray, L. (2002). Stereotypes and older workers: the New Zealand experience. *Social Policy Journal of New Zealand*, 18, 163–177.
- Laflamme, L., and Menckel, E. (1995), "Aging and occupational accidents a review of the literature of the last three decades," *Safety Science*, 21(2): 145-161.
- Laflamme, L., Menckel, E., and Lundholm, L. (1996), "The age-related risk of occupational accidents: the case of Swedish iron-ore miners," *Accident Analysis and Prevention*, 28(3): 349-357.
- Niedhammer, I., Chastang, J., and David, S. (2008), "Importance of psychosocial work factors on general health outcomes in the national French SUMER survey," *Occupational Medicine*, 58(1): 15-24.
- Northcott, H.C. (2011). Book Review: Philip Taylor (Ed.). 2008. *Ageing Labour Forces: Promises and Prospects*. Northampton, MA: Edward Elgar. *Canadian Studies in Population* 38, 209–210
- Shacklock, K., Fulop, L., & Hort, L. (2007). Managing older workerexit and re-entry practices: A 'revolving door'. *Asia Pacific Journal of Human Resources*, 45(2), 151---167.
- Special Eurobarometer 378. (2012) *Active Ageing*. Report.
- Statistical Service of Cyprus 2016, *Labour Force*. Available: http://www.mof.gov.cy/mof/cystat/statistics.nsf/labour_31main_en/labour_31main_en?OpenForm&sub=1&sel=1 [2016]
- United Nations. (2013). *World population policies 2013*. New York: United Nations Publications.
- World Health Organisation (WHO) 2016, 10 facts on ageing and the life course. Available: http://www.who.int/features/factfiles/ageing/ageing_facts/en/index3.html [2017, 06/13].
- 178(I) of 2015, *The Safety and Health at Work Laws of 1996 to (N.2) of 2015*, Cyprus.