Promotion of sustainable employability

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Chapter 1

INTRODUCTION

SUSTAINABLE EMPLOYABILITY AND THE AGING WORKFORCE

Sustainable employability has received considerable attention over the past years and keeps gaining interest. It is recognized that in industrialized countries population demographics are changing and the workforce is aging[1]. Aging of the workforce can be explained by the post-war baby-boom generation going towards retirement age and lower birth rates in the past decades causing fewer young people to enter the workforce[2]. In the near future, many baby-boomers will leave the workforce. From an economic perspective this implies that a relatively small workforce has to carry the burden on public finances and social security systems. In order to mitigate the economic burden, workers are encouraged to extend their working lives[3]. To facilitate this process, policies on sustainable employability have been developed and implemented. For example, early retirement arrangements have been terminated, and statutory retirement age is gradually raised from 65 years in 2013 to 67 years in 2025. This has forced older people to stay longer in the workforce. In the Netherlands, from 2003 to 2013, labor market participation of 55-64 year-olds has grown from 42.5% to 60.1%. For 65-69 year-olds it has almost doubled from 6.9% to 13.1%[4].

Sustainable employability is defined as workers having the opportunity to perform work with preservation of health and wellbeing during their working life, now and in the future[5]. Sustainable employability implies an interaction between a person and its (work) context. Moreover, sustainable employability should be seen as a characteristic and responsibility of workers and their environment[5]. Consequently, determinants of sustainable employability are both individual and environmental in nature. Concepts on the individual level that have been used to assess sustainable employability are sickness absence, vitality, work ability, mental health, and physical health[6-8]. Concepts on the environmental level are political climate, organizational policies, and the actual workplace environment[5], but in relation to sustainable employability these factors received little attention in research so far[9-11].

With aging, workers are more susceptible to develop chronic health conditions and have longer sick leaves[12,13], which can come with high (in)direct costs[14,15]. The most common conditions are musculoskeletal and psychosocial disorders[16,17]. For musculoskeletal disorders prevalence rates of 23-25% have been reported for the EU[18] and 27% had experienced at least one mental health disorder in the past year[19]. It has been shown that the presence of a

chronic health condition impairs work ability[20] which may lead to sickness absence[21], work disability and early retirement[22]. Several physical and psychosocial factors at the workplace have been identified as predictors of sickness absence, such as uncomfortable work positions, handling heavy loads, low decision authority, low supervisor support, and low management quality[23]. Other associated organizational characteristics are high customer adaptation, high lean production, and high performance control[24]. Examples of factors that promote sustainable employability are organizing adjustment latitude, workplace interventions, support from supervisor, motivation to work, and self-management skills to sustain employability[25].

WORKERS' HEALTH SURVEILLANCE

Knowing which factors influence work ability and sickness absence is the first step in prevention. However, there is a lack for timely diagnosis and intervention on possible risk factors for sickness absence[16]. This emphasizes the need for programs designed to intervene in an early phase. A previous intervention study among university and health care personnel showed that objective screening (on health, work, and personal factors) in an early stage is an effective method to identify people at risk for sickness absence[26]. However, the preventive counseling intervention deployed in that study did not lead to reduction of sickness absence[27]. Furthermore, early identification of people at risk for long-term work disability due to musculoskeletal pain (for example, by keying on psychological risk factors) and subsequent adequate rehabilitation intervention can lower this risk[28]. These studies indicate that effectiveness of early identification might depend on identifying the right person, at the right time point, and providing the right intervention.

Identification of people at risk can be done by deploying workers' health surveillance (WHS)[29]. The overall aims of WHS are prevention of occupational illnesses and work-related injuries, maintenance and promotion of health in relation to work, and maintenance and improvement of functioning and employability[29,30]. A WHS is a periodic examination[31] which usually consists of functional screening components targeting occupational risks, targeting mental and physical health risks, and a counseling session. In the counseling session results are discussed and advice is provided with regard to future action. To improve WHS

effectiveness and realize work disability prevention, appropriate interventions should follow screening and counseling[29]. WHS should, therefore, aim to prevent occupational injuries and illnesses, and aim to prevent work disability despite the presence of injuries or illnesses. The intervention part in a WHS is usually covered by workplace health promotion (WHP) programs[29]. These programs are used in a company's structure with the aim to promote lifestyle and consequently improve health, work ability, and work productivity[32]. Effectiveness of WHP programs has been shown to be rather small on work-related outcomes such as sickness absence, work ability and productivity. It was furthermore shown that effectiveness depended on the study sample, the intervention content, and methodological quality of the study[32].

WHS is a common tool in occupational health care in the Netherlands. It has, among others, been studied in construction, fire fighting and nursing[6,33,34]. In these occupations the WHS has been made job-specific to suit the needs of employees. Job-specificity is one of the criteria the International Labour Organization (ILO) and the Netherlands Society of Occupational Medicine (Nederlandse Vereniging voor Arbeids- en Bedrijfsgeneeskunde; NVAB) have formulated for WHS programs[29,30]. It is obvious that job-specific WHS programs should be relevant to specific occupations. However, whether the contents of these WHS programs actually apply to the occupation has hardly been investigated, so their scientific validity can be questioned. Another criterion of the ILO and NVAB, effectiveness of WHS programs, has not been studied extensively. Evidence has been generated on health risk assessments for several outcomes (e.g., body composition, nutrition, sickness absence), but effect sizes varied[35]. Conflicting evidence was observed for the effectiveness of occupational health examinations including FCE on the prevalence of musculoskeletal injuries[36,37]. No research about the effects of WHS programs on sustainable employability had been identified before the start of the present studies.

In this thesis, a novel approach has been adopted which focused on both aspects of prevention, combining elements from occupational medicine and vocational rehabilitation. In addition to preventing work disability, vocational rehabilitation (VR) puts more focus on aiding workers with health problems to remain at and return to work[38]. In VR, early intervention is a central concept which means that workers at risk should be identified in an early stage and should be provided with appropriate health care. Preferably, health care

should follow a stepped-care approach, by first deploying low-intensity, low-cost interventions. If needed, progressively more care can be deployed. Interventions can be realized in regular health care, at the individual level, or by implementing workplace health promotion programs and making use of the structure of an organization, thereby addressing individuals and groups of workers. In this thesis a Short-Form Functional Capacity Evaluation (FCE) has been included in the WHS program. FCEs are an integral part of work injury prevention and vocational rehabilitation. FCE is a test battery that evaluates an individual's capacity to safely perform work-related activities, considering personal factors, environmental factors, and health status[39-41]. It is assumed that these tests resemble work tasks in the meat processing industry and therefore indicate whether workers are fit for the job.

THE MEAT PROCESSING INDUSTRY

The workforce in the meat processing industry is aging. Most older workers remain in the industry and few young workers enter the workforce. Even though physical work demands have been reduced over the past decades, the work still consists of mainly physical tasks. However, little is known about the workload it poses on individual workers, either being load on the musculoskeletal system or load on the cardiovascular system. Most of the tasks in the production process have a repetitive, monotonous character[42,43]. Accurate movements have to be performed at a high pace with extremely sharp knives. Typically, the work is performed in a standing position, either up right or bent forward. Other characteristics of the work involve lifting and pushing/pulling of heavy objects. A description of the production process is provided in Box 1. At the workplace, workers are exposed to several occupational health hazards simultaneously[44]. The most important risks are workload, machine safety, workplace ergonomics, noise, and biological agents. Several injuries and illnesses have been reported such as musculoskeletal disorders, skin disorders, hearing disorders, and infectious diseases[45,46]. These conditions may cause the workers to be more prone to decreased work ability and increased sickness absence. Furthermore, it is known that blue-collar workers, which most workers in the meat processing industry are,

have a lower education level and a lower socio-economic status[47], and that these factors are related to a lower health status[48].

It takes a process with many steps to come from live animals (pigs) to consumer products. Various parts in the process are automated, but a large part of the work is still done manually. The slaughter production starts at the dirty line. From the stables the pigs move to an area where they are stunned, either electrically or in a carbon dioxide pit. Next, they are shackled and their jugular artery is stabbed. After bleeding, they move through a scalding tank before being cleaned and dehaired. From the dirty line, the pigs move to the clean line, where carcasses are opened and evisceration takes place. Evisceration is done manually for which large knives are used and muscular force has to be applied. Organs are inspected and cleaned for further use. Furthermore, carcasses are split and dressed, and controlled on quality. The dressing of the carcasses is partially done manually which requires considerable force application. The dirty and clean lines are situated in a warm environment, where temperatures can rise above 30°C. Afterwards, the pigs are moved to a cooled area where they are stored until the core temperature is maximally 2°C. Carcasses are then taken to the cut floor where deboning is performed and carcasses are divided into pieces well-known to consumer and wholesale business, such as ribs, loins, and steaks. The deboning process is almost completely manual, requires the utilization of knives and saws, and is performed on a conveyor-belt. Deboned meat can be further processed into value added products by equipment such as meat grinders, vacuum fillers and cooking cabinets. Subsequently, products are packed and prepared for transport in the expedition area. From the expedition area, whole, half, or quartered carcasses can be loaded into trucks immediately. Packed products are placed on pallets and then loaded into trucks. The cut floor, packing and expedition are cold areas where temperature is usually maintained at 12°C.

Box 1 Description of the production process in slaughterhouses.

Since 2006, the board of the largest Dutch meat processing company has been collaborating with an occupational health service on reducing sickness absence. Over a period of five years the company managed to reduce sickness absence rates from 7 to 4%. The wish of the company was to sustain these results and therefore the focus has shifted from a curative approach to a more preventive approach. To address the problems outlined above the company has implemented a comprehensive WHS program aimed at sustainable employability. This WHS program is tailored to the needs of the meat processing industry. Throughout this thesis we have called it the POSE program (Promotion Of Sustained Employability). A full and detailed description of the program and its rationale is provided in Chapter 4. Besides the fact that occupational health care is required by law[49] and collective labor agreement of the meat processing industry[50], it is also considered corporate responsibility.

RESEARCH GAPS

There is evidence that promotion of health in relation to work makes a good business case[16]. However, little is known about workplace health interventions in the meat processing industry, and evidence on the effectiveness of WHS programs is scarce[51]. Furthermore, according to ILO criteria a WHS program should cover the needs of the target population, should be relevant, and should have scientific validity. To assess whether this is actually the case, all screening items should be related to the main outcomes of a WHS program. In addition, it is hardly known which elements in a WHS program contribute to its effectiveness. To gather knowledge on these aspects a process evaluation can be performed. This may provide insight into aspects that contribute to success or failure of a WHS program. Finally, as mentioned before the work in the meat processing industry appears to be physically demanding. There is little knowledge about the energetic workload it poses on production workers, how this relates to their energetic work capacity, and how to best assess both objectively in a workplace setting.

MAIN RESEARCH OBJECTIVES

The objectives of this thesis are:

1. To provide an overview of existing health-related interventions in the meat processing industry and their effectiveness.

2. To compare energetic workload and energetic work capacity in production workers.

3. To evaluate a WHS program in the meat processing industry, on its implementation process, effectiveness, and cost-benefit.

4. To study associations between indicators from the WHS program and work ability.

THESIS OUTLINE

Chapter 2 is a systematic review which provides an overview of preventive occupational health interventions in the meat processing industry and describes their contents and effectiveness on work-related health outcomes.

In **Chapter 3**, the comparison of energetic workload and energetic capacity in older meat processing workers is described.

In **Chapter 4**, the rationale of the study is described and the main study design and the primary research questions are introduced.

In **Chapter 5**, the implementation process of the POSE program is described from various stakeholder perspectives.

In **Chapter 6**, the effectiveness and return on investment of the POSE program are described and answers to the research questions introduced in chapter 4 are provided.

In **Chapter 7**, associations between occupational health indicators from the POSE program and work ability are addressed.

Chapter 8 is a general discussion which integrates the main results and discusses methodological considerations. Recommendations for practice and future research are provided, and a final conclusion is drawn.

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