

PROGRAM:	ERASMUS+
ACTION / SUBPROGRAM:	Key Action 2 / Strategic Partnerships
PROJECT TITLE:	“OSH+ for the European Agriculture sector - Stimulating growth in rural areas through capacity building for providers (and beneficiaries) of occupational medicine and OSH services”
Intellectual Output :	O5 “Course 2 Training Materials - Occupational Physicians”
Module:	15 - Vulnerable groups working in agriculture

15 Module 15 - Vulnerable groups working in agriculture

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15.1 Introduction

Agricultural labor is per se a risky working environment and belonging to a marginalized or disenfranchised demographic group can aggravate these risks and compound themselves with specific health concerns. Vulnerable groups in agriculture in developed countries have been largely ignored by public health professionals, and thus the specific health needs of these different populations have largely gone unmet. The agrarian groups discussed in this module here have special risks associated with age, gender, low socioeconomic status, ethnicity, race, culture, or religious beliefs. The demographic composition of these groups can vary widely depending on the specific location; however, many are common to all industrialized agricultural countries with similar agricultural systems (i.e., countries in the EU, Australia, New Zealand, and Canada). Specific groups that will be covered in this module include: 1) women, 2) migrant workers and seasonal workers, 3) the elderly, and 4) children/youth

Pedagogical Objectives

By the end of this module, participants should be able to:

- Define vulnerability in an occupational health setting
- Identify what groups are considered to have special risk in agricultural occupational settings
- Identify special health risks particular to each vulnerable group
- Identify specific prevention methods for each vulnerable group discussed in the module
- Familiarize themselves with vulnerability assessment tools

15.1.1 Glossary

Term	Definition
Child/Youth	Person who is not a legal adult. In most countries this is 18, but may vary
Cultural Competency	Knowledge and understanding of another person's culture; adapting interventions and approaches to health care to the specific culture of the patient, family, and social group.

Degenerative Osteoarthritis	Sometimes called degenerative joint disease or degenerative arthritis, osteoarthritis (OA) is the most common chronic condition of the joints. OA can affect any joint, but it occurs most often in knees, hips, lower back and neck, small joints of the fingers and the bases of the thumb and big toe
Elderly	In most developed countries, a person who has reached a chronological age of 65 or older
Endogenous Risks	Risks to which members of the group in question are exposed by virtue of their inherent characteristics
Exogenous Risks	risks to which members of the group are likely to be exposed because of the nature or type of work they are more likely to be involved in
Health Literacy	The cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health
MSFW	A migrant farmworker is defined as an individual who is required to be absent from a permanent place of residence for the purpose of seeking employment in remunerated agricultural work.
Spontaneous Abortion	A miscarriage. Noninduced embryonic or fetal death or passage of products of conception before 20 wk gestation
Uprooting	Moving (someone) from their home or a familiar location
Vulnerable Population	a population that is more likely to be exposed to certain risks more than the general working population

15.1.2 Defining Vulnerability

Vulnerability is a word which has many possible definitions depending on the context. While the WHO has developed a definition of vulnerability for environmental hazards and disasters, a similar definition has not been developed specifically for workers, much less in the agricultural sector. Despite this lack of a concrete working definition, there are understood characteristics that describe what comprises a vulnerable population. The European Parliament provides a definition for vulnerable populations within occupational health, stating that: a vulnerable population is more likely to be exposed to certain risks more than the general working population. These risks are classified as either endogenous or exogenous. (European Parliament)

Endogenous risks are risks to which members of the group in question are exposed to by virtue of their inherent characteristics. For example:

- Physical size (women and children)
- Age
- Medical conditions

Exogenous factors are risks to which members of the group are likely to be exposed to because of the nature or type of work they are more likely to be involved in. For example:

- Using pesticides
- Proximity to animals
- Heat or cold exposure

Mechanic and Tanner (2007) describe vulnerability as:

“Vulnerability, the susceptibility to harm, results from an interaction between the resources available to individuals and communities and the life challenges they face. Vulnerability results from developmental

problems, personal incapacities, disadvantaged social status, inadequacy of interpersonal networks and supports, degraded neighborhoods and environments, and the complex interactions of these factors over the life course.”

Because vulnerability is so tied to context and societal norms, persons who are vulnerable in one region may not be vulnerable in another. Depending on the demographic make up of any given country, the populations that can be considered vulnerable might vary, and assessment of the needs of different groups may need to be adapted. Likewise, vulnerability is not necessarily polar or linear, and instead aspects of vulnerability may overlap, rendering the assessment of vulnerability much more complex. For example, the elderly tend to also have chronic conditions, migrants may generally have lower socioeconomic status, or an individual can be a woman, migrant, and elderly all at once.

Other groups who may be vulnerable but are not described in this text in depth include:

- Ethnic minorities (e.g.: Roma)
- Disabled
- Low-Income
- Low-Educational Attainment
- Chronically ill

15.2 Women

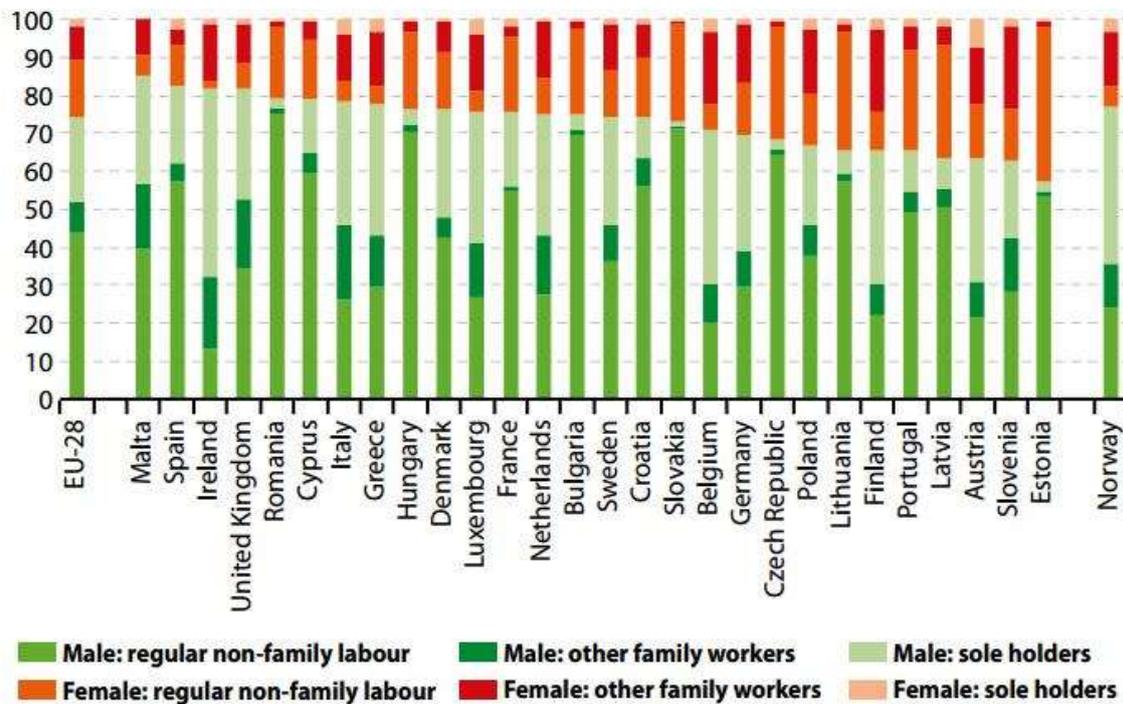
15.2.1 Introduction

Women working in agriculture are a generally underrepresented group with regards to services, training, and data collection. This is in part due to the fact that women are not the majority of agricultural workers: according to the Food and Agriculture Organization of the United Nations (FAO) the proportion of the agricultural labor force that is female is less than 50 % for the world as a whole and for all the usual country groups. Overall, using the weighted measure, women are only 42.2 % of the agricultural labor force. (Quisumbing et al., 2014)

The labor in which women have contributed to agriculture is typically different from that of men. Smith (1975) reported a natural traditional anthropologic gender division in agriculture: women acted as care takers of plants, small animals, and family; men adopted technology, power equipment and large commodity production. Although this gender division may still be present to some extent, it has been diminishing over the past three decades as women are increasing their participatory role in agricultural management and production (Dimich-Ward et al., 2004 ; Tutor-Marcom, Bruce & Greer,2014).

In Europe, women are also increasingly and extensively involved in agricultural labor. For example, farm women in Finland are listed as operators on 34% of the farms (Kallioniemi et al., 2011). In Poland, 66% of Polish women living in rural areas are involved in agricultural production (Sawicka, 2001). Considering only people working on farm on a regular basis, but not necessarily fulltime⁶, women represented 42% of the total agricultural labour force in 2007, or slightly more than 11 million people. Almost 60% of these women work in the three Member States with the biggest agricultural sectors: Romania (27% of all EU female agricultural employment), Poland (21%) and Italy (11%). (https://ec.europa.eu/agriculture/sites/agriculture/files/rural-area-economics/briefs/pdf/07_en.pdf) It is often the case that many of these women are farm managers because they have taken over the running of the farm if a husband is killed or injured or because their husbands and children work in labor off the farm (Sawicka, 2001).

Table 1. Agricultural participation by sex



Note: for this analysis very large farms are defined in economic terms as those with ≥ EUR 100 000 of standard output.

Source: Eurostat (online data code: ef_lflegecs)

Retrieved from: <http://ec.europa.eu/eurostat/documents/3217494/7777899/KS-FK-16-001-EN-N.pdf/cae3c56f-53e2-404a-9e9e-fb5f57ab49e3>

15.2.2 Why Are Women Vulnerable?

15.2.2.1 Pregnancy

Probably the most significant concern for women in agricultural labour is the focus on ensuring that they have adequate protection of their reproductive health. The strenuous workload, the proximity to livestock, and exposure to additional chemicals can result in numerous dangerous consequences such as infertility, miscarriages, or birth defects (Donham & Thelin, 2016).

Carbon monoxide, nitrate toxicity, oxytocin, and prostaglandin exposures are hazardous to pregnant women who work in agriculture and/or their unborn fetuses (Donham & Thelin, 2016)

Although the risk of acute CO poisoning to women is small, the risk of poisoning to an unborn fetus is much higher: because of the physiology of the human placenta the effective CO level experienced by the fetus may be twice as high as that experienced by the mother.

Women working in livestock production are likely to administer antibiotics and hormones used to assist parturition in swine and cattle. Oxytocin is a commonly used product that assists uterine contractions and milk let-down. Prostaglandins are also commonly used in livestock production to induce partition, terminate a pregnancy, or stimulate and synchronize estrous. An unintended needle stick of a pregnant woman with either of these products can cause her to miscarry or abort (Fenton et al., 2010)

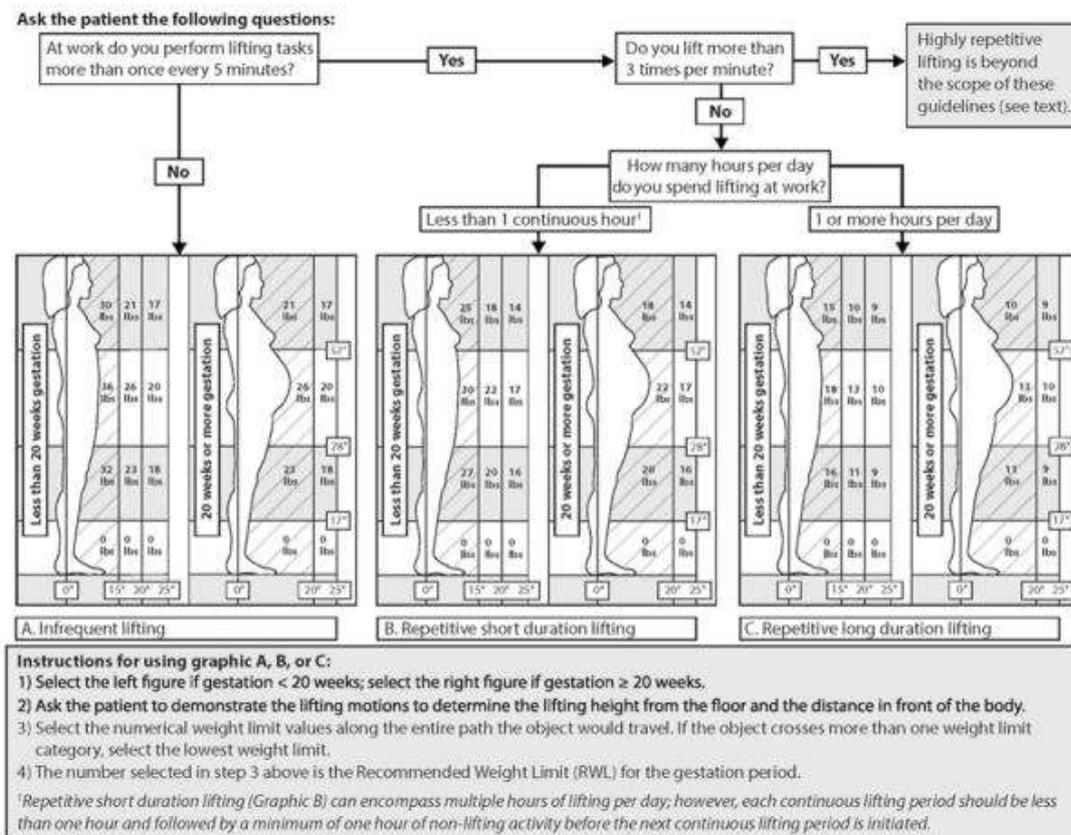
Contracting any zoonotic or environmental infections, including brucellosis, Q fever, or Listeria, may cause abortion. Pregnant women working with cattle, sheep, and goats need to be especially aware of this risk

15.2.2.2 Heavy Lifting During Pregnancy

Working in agriculture can pose the need for laborers According to the Health and Safety Executive of the Royal College of Physicians in the UK, there are few European-based specific guidelines to follow with regards to what a typical safe lifting load for women who are pregnant would be. However, a ‘typical’ load in research studies that provided such detail was about 10-12 kg—a load that is commonly lifted in the home by pregnant women with toddlers (Royal College of Physicians). In 1984, The American Medical Association developed a series of brief guidelines advising pregnant workers what weights are appropriate for lifting at different points of gestation.

However, these guidelines may now be out of date and do not take into consideration a number of factors beyond strictly weight. Other factors of consideration include the horizontal reach distance, vertical height of the lift, asymmetry (rotation of the spine), duration of lifting, and the nature of the hand-to-object coupling. In response, Waters et al. (2014) adapted NIOSH guidelines to derive maximum recommended weight limits for healthy workers with uncomplicated pregnancies and in the development of provisional clinical guidelines. These guidelines have been organized into the below infographic:

Table 2. Lifting Guide for Pregnant Workers



From a biomechanical perspective, important changes that occur during pregnancy include (a) changes in anthropometric characteristics (increase in overall mass of the body and in particular the upper body, changes in the location of the center of mass, increased abdominal girth, and changes in spinal curvature during pregnancy), (b) increased joint laxity and potential spinal instability, and (c) changes in balance control (Waters et al. 2014).

Physicians must become informed about the weights of loads that are safe to move and what movements are safe for pregnant women to perform on farms. They should thusly instruct women who are pregnant about these recommendations and insist they are followed.

15.2.2.3 Pesticide Exposure during Pregnancy

For women working in agriculture, one of the greatest risk exposures to their reproductive health is the use of pesticides. Pesticides, as explained in previous chapters can have a number of negative short-term and long-term effects. However, for women who are pregnant or planning to become pregnant, these dangers are amplified and can damage both the woman's reproductive system as well as the fetus.

Naidoo et al. (2011) conducted a study analyzing causes of spontaneous miscarriages and infant death among rural women in South Africa. An important finding was that spraying pesticides during the first three months of the pregnancy was significantly associated with having a spontaneous miscarriage. This finding is supported by findings of the Ontario farm family health study (Arbuckle, Lin & Mery, 2001) that showed an increase in spontaneous miscarriages with postconception exposure to glyphosate and thiocarbamates.

A 2001 study by Arbuckle, Lin & Mery analyzed the effects of pesticide exposure on the risk of spontaneous abortion on women working on a farm in Ontario, Canada. The results of the study suggested that the critical window of exposure for spontaneous miscarriages less than 20 weeks of completed gestation weeks is the four month period from three months before conception through the first calendar month of conception. Thus, this study concludes that pesticide exposure could ultimately contribute to miscarriages even prior to conception. Preconception exposure to the pesticide active ingredients glyphosate, atrazine, carbaryl, and 2,4-D was associated with a 20–40% relative increase in risk. Pesticides belonging to the triazine, thiocarbamate, or phenoxy acetic acid chemical families were also associated with moderately increased risks (Arbuckle, Lin & Mery, 2001).

The manifestations of these effects pre- and post- conception are also different, and are also dependent on the type of chemical exposure. The findings suggest that preconception exposures lead to gross chromosomal anomalies. On the other hand, postconception exposure to specific pesticides tends to damage the fetus or fetus–placenta complex instead of causing chromosomal anomalies (Arbuckle, Lin & Mery, 2001).

Additionally, it was also shown that there is a relationship between maternal age and pesticide exposure on the risk of spontaneous abortion in both exposure windows. Increased health risk as a result of pesticide exposure was most notable amongst women aged 35 and older. The same Ontario study observed that advanced maternal age was associated with an increased risk of spontaneous abortion (Arbuckle, Lin & Mery, 2001). This is theorized to be because older women have a greater cumulative exposure to various pesticides, other unknown factors, or accumulated toxicity.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240415/pdf/ehp0109-000851.pdf>

15.2.2.4 Heat Exposure During Pregnancy

Excess heat exposure can be a major hazard for agricultural workers as well, during the summers or in countries with extreme climates. This exposure can cause the body to rise above 39°C (102.2°F), leaving the worker at risk for heat exhaustion, heat stroke, or dehydration (NIOSH, 2017). This risk is especially increased for women who are pregnant, as they are more likely to get heat exhaustion or heat stroke because the body must work harder to cool down both mother and baby (NIOSH, 2017). Hormonal fluctuations throughout all stages of pregnancy also exacerbate these risks (Cunningham et al, 2010). Pregnancy also increases the likelihood of the worker to dehydrate, which inhibits the body from cooling itself adequately through sweating (NIOSH, 2017). The newborn is especially sensitive to too high or too low temperature in the environment because of its limited temperature regulation capacity (Poursafa & Kelishadi, 2011).

Strand et al. (2011) analyzed several studies discussing seasonal patterns of birth outcomes, such as low birth weight, preterm birth, and stillbirth, in relation to the temperature of the environment. The authors of this study compiled epidemiological data on seasonality of birth outcomes and the impact of prenatal exposure to ambient temperature on birth outcomes. The majority of these studies found peaks of preterm birth,

stillbirth, and low birth weight in winter, summer or both, which indicates that the extremes of temperature may be a risk factor for poor birth outcomes (Strand et al., 2011).

15.2.2.5 Return to work

Firstly, rural female headed households often operate under tremendous financial and time constraints and thus may be pressured to return to work early soon after the birth of a child. Especially on farms, where women may live in close proximity to their work, and may have to complete a certain amount of work within a particular season, women may not take sufficient time to recover from childbirth and spend time with their infant. In other working populations, the early return of mothers to work was associated with adverse health outcomes among their offspring (Berger, Hill & Waldfogel, 2005). As an example, the early return of a mother to work may result in early weaning of infants and introduction to formula feeds, which can ultimately be damaging to the neurodevelopment of the child.

There is considerable evidence that child developmental outcomes are generally better if mothers do not work, or do not work full-time, in the first year of life (Brooks-Gunn, Han & Waldfogel, 2002) Children whose mothers return to work early are less likely to receive regular medical checkups and breastfeeding in the first year of life. These impacts are stronger when mothers return to work full-time within the first 12 weeks (Brooks-Gunn, Han & Waldfogel, 2002).

15.2.2.6 Depression and Anxiety

Farm women are more prone to anxiety and depression than their male counterparts. This can be explained by a number of factors, most notably attributed to chronic stress associated with the social, emotional, and physical well-being of family members (Donham & Thelin, 2016). What has often been labeled as “triple-duty lives”. This refers to the phenomenon in which women who work in agriculture often not only do farm work, but are also primary caretakers of the family, and may also supplement with additional income working off the farm. This increases fatigue, which ultimately can result in higher levels of stress, anxiety, and depression. Poor emotional health can be particularly damaging to the family unit, including children, and can lead to increased prevalence of alcohol abuse and chronic disease.

Additionally, there is a concern about women occupying a male dominated space in which they can become victims of sexual harassment and assault.

Prevention

As previously mentioned, women may be undereducated about risks in farming. Since most of agricultural work, especially harder labour has been conducted by men, most safety training and awareness has been directed toward men. In the cases where women are expected to take over the labour of their husbands or sons in the case of injury or death, women on farms may have no training whatsoever. Women on the farm need to be trained to perform their own agricultural work more safely, such as safe animal-handling and safe pesticide application and laundering of contaminated clothing. (Kallioniemi et al, 2011)

Physicians must advise women to take careful precaution with pesticides, not only if they're pregnant, but also if they are planning to become pregnant within the next few months following consultation. Avoiding pesticides work or ensuring the proper wearing of protective equipment must be emphasized.

In addition to standard safety practices, physicians must instruct pregnant women to take extra precautions to prevent accidental needle sticks with oxytocin or prostaglandins. Furthermore, pregnant women should not work in livestock or other buildings where heaters, internal combustion engines, or another source of carbon monoxide is present unless an observational evaluation or an environmental assessment indicates the environment is free of CO (Donham & Thelin, 2016). In environments where CO may be present, it is important to recommend to women, especially pregnant women, that they should install CO monitors to advise them of unsafe levels of CO.

Because of the important role family often plays for farm women, farm safety education should include women, the rest of the family and hired workers together. This family focus will not only help women directly, but will indirectly help the entire family, as social support is important in promoting safe behavior. The information provided during these trainings can aid women in fulfilling their role as a caretaker, and give them the confidence and support to encourage family farm safety. This enablement of management abilities can help them feel more in control and thereby reducing overall stress (Fiandt, Pullen & Walker, 1999).

In the cases of mental distress, ensuring access to mental health screenings, female physicians and counselors should be provided if available.

15.2.3 Additional resources for Women in agriculture:

Promoting Health for Working Women (2008): Based on European health initiatives on reducing workplace risks and promoting workplace health, *Promoting Health for Working Women focuses on issues that predominantly or exclusively affect women, or have gender-specific implications because of differences or special circumstances that exist at the workplace.* The editors and their twenty collaborators combine theoretical, research, and practical perspectives to create a framework for studying female workers' health issues and risks. The methodology for organizing on-site health promotion interventions at the workplace is presented in detail, taking into consideration the key issues women face.

Reproductive Health and the Workplace: Exposure to excess heat at work could increase your chances of having a baby with a birth defect or other reproductive problems. On this website you can learn more about heat at work and what you can do to reduce your exposure for a healthier pregnancy.

AgriSafe Network: Women's Health: This website, run by a non-profit international membership organization, represents health and safety professionals who strive to reduce health disparities found among the agricultural community. Many agricultural injuries, diseases, and fatalities can be prevented through the delivery of agricultural occupational health services.

15.3 Migrant and Seasonal Farm Workers (MSFWs)

15.3.1 Introduction

Developed countries depend highly on migrant and seasonal workers to conduct farm work. Migrant and seasonal workers move from farm to farm as seasons change and labor demands change with production cycles. They often return to their home countries in the off season. The EU employs 4.5 million migrant and seasonal workers; about 500,000 of these are from outside the EU (ILO). For Europe and Australia, the percentage of migrant and seasonal workers in the agricultural workforce is somewhat lower than in the US. Migrants are usually hired to do the hardest and most unhealthy jobs, while at the same time receiving poor wages and experiencing long working days (Kasimis & Papadopoulos, 2005).

The UK employs migrant and seasonal farm workers from many different European and Commonwealth countries. The primary countries of origin for the bulk of these workers in the UK are India, Australia, and South Africa. (Office for National Statistics, 2015). The horticultural industry alone employs about one million workers every year. Other farm labor jobs within the European community include fruit picking and vegetable picking (PickingJobs, 2005). French farmers employ migrant and seasonal workers to pick fruit such as grapes, blueberries, raspberries, and strawberries. Denmark uses migrant and seasonal labor to pick strawberries among other crops, and the Netherlands employs migrant and seasonal labor to pick fruit and flowers.

It is important also to note that migration and migration patterns between different European countries are not the same, and thus their concerns—health and occupational—are not necessarily translatable between countries. Some European Countries provide labor while others receive it. Some have a higher prevalence of migrant workers from outside of the EU.

It is equally important to mention that many statistics on migrant and seasonal farm work is “illegal” or “undeclared” and thus may make it difficult to obtain accurate data on these populations and their specific health concerns.

15.3.2 Why are MSFWs Vulnerable?

Unlike other vulnerable groups, the factors that render MSFWs vulnerable are often exogenous versus endogenous. We must consider why otherwise healthy adults (for example) working in agriculture could be considered a vulnerable population. The literature discusses primarily concerns regarding the social circumstances of migrant workers. Barriers to occupational health for MSFWs include:

- Language and cultural barriers
- Lack of training
- Lack of understanding of OSH law and procedure in their country of work
- Mental distress
- Inadequate living conditions
- Insufficient access to healthcare

15.3.2.1 Language and Cultural Barriers

Migrant and seasonal farm workers’ often have cultural and language barriers they must overcome before they can safely perform their jobs. The most basic of these is that the worker may not understand the language of the country to which they have migrated for work. This presents a number of complications. Firstly, they are likely unable to understand most safety instructions if they are not presented in their native language. Second, they are incapable of reporting or seeking help for a medical issue or emergency. Furthermore, they may feel powerless, unable to complain of hazards due to the fear of losing their jobs or of deportation. (Donham & Thelin, 2016) This ultimately results in a greater possibility for exploitation and a lack of empowerment which prevents them from seeking medical or legal help. For example, in the UK, migrant workers often have poor knowledge of English which prevents them from accessing information about their rights, entitlements and obligations, unfair dismissal, poor working conditions, and accessing basic healthcare (CRC, 2007).

Moreover, given the farm workers lack of knowledge about and experience of the culture in the recipient country, they have few opportunities to seek alternative work on other farms, and even less within other sectors of the economy should they want to look for safer work or additional income (Rye & Andrzejewska, 2010). This also becomes a concern when migrant workers may have been trained in one specific area and—due to financial opportunity—take on work in a different sector of agriculture with safety standards with which they are not familiar. Lack of health and safety training has been cited as a major concern. Several studies have shown that only 7% of farm operations who hire MSFWs provide health and safety training for their workers, and less than 30% of MSFWs have had adequate health and safety training for jobs they do (Arcury, Estrada, & Quandt, 2010).

Because of the migrant nature of this population, there is the additional complication that medical records may not be available. This is particularly important with regards to vaccinations and ultimately containing the spread of infectious disease on worksites and living conditions. If and when possible, physicians must attempt to provide the correct schedule of immunizations with migrant and seasonal agricultural labourers.

Prevention:

Occupational physicians who are aware they are working with MSWs should become informed as to the cultural and ethnic background of the patients with whom they are working. This will ensure that the patient develops a good rapport with the physician, will follow their instructions, and that the guidance given by the physician is appropriate and sensitive.

The WHO provides the following recommendations to become more culturally competent:

- elicit patients' language, culture and ethnic group
- be aware of cultural stereotypes
- avoid using patients' families as interpreters
- familiarize oneself with culturally specific expressions of distress
- maintain confidentiality
- avoid religious and social taboos
- use same-sex chaperones
- remember potential prescribing pitfalls
- allow culturally specific rituals, for example, after death
- do not make assumptions

Studies evaluating approaches to managing language barriers in medicine recommend professional interpreters as a means of mediating communication between patients and healthcare providers (Jacobs et al. 2001) The use of informal, or ad hoc, interpreters such as family members or untrained strangers is more likely to lead to adverse clinical consequences. Such interpreters are unlikely to have training in medical terminology or confidentiality and their presence may inhibit the disclosure of sensitive medical issues such as domestic violence, psychiatric illness, and sexually transmitted diseases. Most importantly, a study found that the use of informal interpreters leaves patients worried, frustrated, and with experiences of error and misdiagnosis and that such patients have expressed a clear preference for the use of professional, trained interpreters in general practice consultations.

Because lack of safety training is a major health concern for this population, it is critical to educate farm owners how to better teach occupational health and safety to Migrant and Seasonal workers. Culturally and linguistically appropriate and translated materials are needed (Arcury, Estrada, & Quandt, 2010).

15.3.2.2 Inadequate Living Conditions

Adequate, safe, and sanitary housing has been a long-standing problem for MSFWs. Housing may be located close to fields where pesticides are stored and applied, creating exposure risk through contamination of the local premises, air, and water (McCauley, 2001). Lack of potable water and sanitary toilet and bathing facilities are often a concern in these establishments as well. MSFWs who rent housing on the available market may also be relegated to less than standard housing, as they look for low-rent facilities as wages are minimal and they want to save money to send home (Donham & Thelin, 2016).

MSFWs have a six-fold risk of tuberculosis compared to other employed adults (Schenker, 2010). The risks include having been born in a country with a high prevalence of tuberculosis. If tuberculosis-infected persons cohabit in migrant camps or in the workplace, this creates a risk of infecting other workers. Additional risk factors include poverty, crowded living conditions, mobility, poor access to health care, and non-compliance with tuberculosis medications.

Prevention:

The role of the physician here is not to ensure that the worker has access to safer housing (this is beyond the capacity of the physician), but instead to ensure that the worker is following standard hygiene practices as closely as possible, such as washing hands thoroughly as well as their laundry to prevent pesticide contamination and the spread of infectious disease.

15.3.2.3 Health Literacy

The World Health Organization defines health literacy as “the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health.” (WHO) The general population tends to have insufficient levels of health literacy regardless of socio-economic status and educational attainment. However, lower socioeconomic status and migration are often associated with lower levels of health literacy.

Prevention:

Lack of general health literacy becomes a particularly great barrier when the physician communicates with a patient in a language that is not their native language. The Centre for Culture, Ethnicity, and Health provides a brief guide for techniques which may make written materials easier to read (CEH, 2015).

- Use large or bold text (e.g. 12 point +)
- Allow for white space
- Keep line spacing in mind
- Don’t use different fonts, stick to one clear font
- Keep the message short
- Use pictures that are culturally appropriate (particularly useful for lack of language knowledge)
- Use colours to enhance but not complicate the document

At the link below you will find a linguistically appropriate graphic which was made for Spanish speaking agricultural workers in the USA. This provides a good example of how simple language—in the language of the host country as well as the language of the country of origin—in combination with pictures clearly depicting risky agricultural activities.

http://www.migrantclinician.org/files/adol_rapidrisk_assess_board_2_0.pdf

15.3.2.4 Mental Distress

Mental distress can also be an occupational risk factor for MSFWs. Extended mental health problems can lead to the development or exacerbation of chronic health conditions, violence, or substance abuse. Stressors that can lead to increased risk of depression and anxiety among MSFWs includes (Magaña & Hovey, 2003):

- Uprooting
- Separation from nuclear and extended family
- Separation from community and cultural origins
- Adapting to a host culture
- Low and unpredictable income
- Language barriers
- Discriminatory treatment
- Inadequate housing
- Rigid work demands
- Fear of deportation

Prevention:

When and if possible, mental health screenings should be conducted with MSFWs in their language of origin. This is particularly difficult with this population, as conceptions of mental health and mental illness may vary dramatically between cultures. The physician should encourage the structuring of social support networks between the workers as well, in addition to incorporating mental health screenings into regular check-ups.

15.3.3 Additional resources for MSFWs:

[The Picture Communication Tool](#), developed with the support of the Mid Essex Hospital Services in the UK, comprises sets of drawings that can be used with people who do not share the language of their provider, or who are unable to communicate verbally. It cannot replace the need for interpreters but can be particularly useful for day to day activities within a medical setting. The drawings can be used to reinforce what has been explained to patients, and can be kept in the possession of a patient so they can make their needs understood.

[Good Practice Guide to Interpreting \(Arabic, Bengoli, Chinese, English, Somali\)](#): This guide was produced by Migrants Organise to raise awareness of why interpreting is important and how to use an interpreting service correctly in health setting. It sets out good practice for medical professionals and users, for example not to use children as interpreters.

15.4 Children

15.4.1 Introduction

Data from the U.S. National Institute for Occupational Safety and Health (NIOSH) revealed that in 2014, almost 1.61 million youths (aged under 19 years old) were exposed to a farm environment. Of this number, more than 892.800 young people lived on farms and more than half of them (51%, 454.000) worked on these farms, 265.600 non-resident youth were hired as farm workers and approximately 23.883.000 youth visited farms (e.g. relatives, school tours, agritourism etc.) (NIOSH, 2016). Children between the ages of 15-17 working in agricultural settings experience four times the risk of fatal injuries than young workers employed in other workplaces (NIOSH, 2003). In 2014, 11.942 youth were injured in agriculture-related incidents; about 33 children daily. Almost every three days, a child dies from fatal farm-related incidents, based on data for the 1995-2000 period where 115 farm youth deaths were reported annually (Goldcamp, Hendricks & Myers, 2004; NIOSH, 2016). In the U.S. the combined cost of fatal and non-fatal injuries for youths on agricultural environments was estimated at \$1.42 billion (Zaloshnja, Miller & Lawrence, 2012).

According to UN research, in Georgia 29 % of children aged 7-14 are working. In Albania the figure is 19%. The government of the Russian Federation has estimated that up to 1 million children may be working in the country. A June 2013 study indicated that 5.2 percent of children younger than 16 are working in Italy. Children in countries affected with drastic austerity measures such as Greece, Cyprus, and Portugal are at greater risk for participating in child labor (Muižnieks, 2013).

Child labour is first and foremost illegal and thus, much like with undocumented migrants, it is difficult for accurate data on child labour in agricultural settings. Often times these children will not be “employees” of the farm, but instead work on family farms aiding relatives in farm work. As a result, they often become exposed to many of the same occupational risks that adults face, yet with fewer protections.

15.4.2 Why are Children Vulnerable?

Children have a number of exogenous factors which render them vulnerable in agricultural settings. Children working in agriculture are at a higher risk of injuries and accidents from a wide variety of machinery, biological, physical, chemical, dust, ergonomic, welfare/hygiene and psychosocial hazards, as well as long hours of work and poor living conditions (Donham & Thelin, 2016; Hurst, 2007; International Labour Organisation, 2006; NIOSH 2003).

They are smaller, have less experience and coordination, do not have protective equipment suited to their body sizes, and they do not have the agency or awareness to realize the severity of their work. One major

concern, which acts as a unique risk factor, is that children, especially in the first 5 years of their life, engage in developmentally-appropriate exploratory behaviors which are fundamentally different than those of adults. Specifically, they unintentionally increase their risk of exposure to dangerous chemicals and other hazards through their hand-to mouth, object-to-mouth behaviors and ingestion of various small items (Landrigan & Garg, 2005; Landrigan, Kimmel, Correa & Eskenazi, 2004). Another unique feature of children is that they do not have the same understanding of danger as adults do, and their ability to quickly and safely move out of potentially hazardous situations is lacking. Normal exploratory and playtime behaviors can place young children in danger, such as placing items in their mouths that have been contaminated by pesticides or other chemicals, play near livestock, climb on vehicles and machinery, play with agricultural tools etc. (Donham & Thelin, 2016; Esser, Heiberger & Lee, 2003; Landrigan & Garg, 2005).

15.4.2.1 Pesticide Exposure

Children working or living on agricultural land are often in danger from exposure to dangerous chemicals. Fertilizers, pesticides and insecticides are very commonly used in agriculture. However, the toxins contained within these chemicals can potentially cause major health issues to children on farms, such as skin and eye irritation, nervous system damage and have even been linked to some forms of cancer. Children can be exposed to these chemicals by inhalation, eating without thoroughly washing their hands and produce, not wearing proper protective clothing or by playing and being near improperly stored chemical containers.

Additionally, the developing human brain is very sensitive to injury caused by toxic chemicals, and several developmental processes have been shown to be highly vulnerable to chemical toxicity. For example, in-vitro studies suggest that neural stem cells are very sensitive to neurotoxic substances such as methylmercury (Bose et al., 2012). Some pesticides inhibit cholinesterase function in the developing brain, thus affecting the regulatory role of acetylcholine before synapse formation (Augusti-Tocco, Biagioni & Tata, 2006). Early-life epigenetic changes are also known to affect subsequent gene expression in the brain (Grandjean & Landrigan, 2014).

There are physiological differences between adults and children with respect to how their bodies process their environments in proportion to their mass. For example, for their weight, children consume more food and drink more than adults, increasing their possible dietary exposure to contaminants (Landrigan et al., 2004). This dietary exposure to contaminants is compounded by the fact that children have immature livers and excretory systems which may be unable to effectively remove pesticide metabolites (Landrigan et al., 2004). These metabolites may block the absorption of critical nutrients in children's diets, which further affects health outcomes. Children can be exposed to pesticides in utero, breast milk, dermal contact, and food ingestion (Chalupka & Chalupka, 2010). Children also live closer to the ground than adults, which may increase their exposure to pesticides sprayed or precipitated there.

Children are also more likely to be negatively affected by pesticides and other contaminants in agricultural settings due to the fact that their respiratory physiology is different from that of adults. Oxygen consumption in young children is high: approximately 7 ml/kg/min at birth (c.f. 3-4 ml/kg/min in adults) (Gomersall, 2007). The metabolic cost of respiration is higher than in adults and may reach 15% of total oxygen consumption. Similarly the metabolic rate in infants is almost twice that of adults and consequently alveolar minute volume is greater and the functional residual capacity (FRC) relatively low (Gomersall, 2007). This ultimately means that if there are airborne contaminants, it is more likely that in relation to their body mass, they are inhaling more contaminants. This, in combination with an underdeveloped excretory and liver system, could result in higher levels of toxicity.

15.4.2.2 Machinery

Agricultural activities almost always include the use of heavy duty machinery and vehicles (tractors, grinders, all-terrain vehicles, baling machines, trailers, conveyor belts, trucks etc). These are considered to be safety hazards by international standards and policies, which advise extreme caution during operation. Wheeled

vehicles can overturn while in motion or slightly move when parked, which can result in potentially fatal accidents. Similarly, children can lose their footing or balance which can result in them getting crushed, run over, entangled or dragged into machinery while in operation.

15.4.2.3 Use of Dangerous Tools

Common agricultural tools that could harm children include scythes, machetes, knives, hooks, pitchforks, sickles, shovels, sledgehammers. These are used when tending to crops, removing weeds etc. This hazardous equipment can often cause cuts and injuries, potentially serious ones (amputations).

15.4.2.4 Ergonomic Issues

The usage of machinery and tools can be detrimental to young agricultural workers' development. Because adolescents experience growth of their organs and musculoskeletal systems during this time, their bodies are in a constant state of change and are more likely to be harmed or injured during strenuous or physically demanding work.

15.4.2.5 Livestock

Children working with animals are at a higher risk of sustaining injuries from livestock and wild animals. Activities, such as milking, herding or shepherding can be hazardous, as animals – particularly large ones – can kick, bite, shove, jolt, push or stamp, leading to potentially dangerous injuries. Livestock typically have a very narrow field of vision, and are unable to see below their chins. Because of this, the animal might not see the child until it is very near and react in a startled fashion, causing injury.

Zoonotic infections can also occur as a result of close proximity to animals and animal handling spaces. Inhaling organic dust particles by preparing animal feed for prolonged periods can cause allergic respiratory diseases such as pneumonia or asthma. Young children are at a higher risk of acquiring infections from farm animals, particularly from organisms related to animal fecal matter, such as *Campylobacter*, *E.coli*, and *Salmonella*.

Prevention

The most effective intervention is reducing harm toward children is hazard removal and implementing effective supervisory structures in the environments in which children work (Donham & Thelin, 2016). This often involves either parental education, or the use of a third party auditor to go through farm inspections to remove as many hazards as possible. Implementing barriers between children and agricultural hazards should also be emphasized. Examples of barriers include fences around ponds and manure pits, and locked access to stored farm chemicals. Parental modeling of safe farm practices should be emphasized in occupational health, as when a parent or guardian is well trained in safety and occupational health, children often follow suit.

15.4.3 Additional resources for Children in agriculture:

Children and Safety on the Farm: A manual on child safety on farms produced by the Pennsylvania State University College of Agricultural Sciences Agricultural research and Cooperative Extension (USA) details more specific instructions on key preventative measures to ensure child safety on farms, including the following tables depicting what is appropriate for different age groups. These tables provide both physiological and psychological developments at different stages of childhood and adolescence and specific agriculture-related activities that each population can perform according to these developmental benchmarks.

Table 3.1. Age-appropriate activities

Growth stage	Developmental characteristics	Causes of deaths/injuries	Preventive strategies	Developmentally appropriate work tasks
5–9 (preschooler/ early elementary school age)	<ul style="list-style-type: none"> ■ Is learning to use small and large muscles—slow, steady growth stage ■ Has poor hand-eye coordination ■ Tries to master more complex skills ■ Operates with concrete facts, not capable of abstract ideas/thinking ■ Wishes to appear competent; seeks parental approval ■ Wishes to take on tasks without adult supervision ■ Is discovering that parents make mistakes, are human ■ Rarely follows through on a task—not yet ready for responsibility 	<ul style="list-style-type: none"> ■ Slipping and falling from tractors, trucks, or heights ■ Becoming entangled in augers, other machines ■ Suffocating in grain ■ Being kicked or trampled by animals 	<ul style="list-style-type: none"> ■ Set rules. ■ Discuss safe behavior with children. ■ Assign and closely supervise chores. ■ Talk openly about types of injuries and consequences. ■ Never assign intense, physical chores—they can lead to exhaustion. ■ Play games (with adult supervision) that focus on farm safety issues. ■ Use JSA. 	<ul style="list-style-type: none"> ■ Tasks of short duration that do not require hand-eye coordination ■ Projects with hand tools, not power tools ■ Help with watering plants and feeding small animals, such as pets or orphaned baby animals ■ Collect eggs
10–13 (middle school age/ early teen)	<ul style="list-style-type: none"> ■ Is growing at a steady rate—approaching puberty; boys grow more quickly than girls ■ Small muscles are developing rapidly ■ Has same coordination as adults but lapses of awkwardness are common ■ Has greater physical and mental skills ■ Desires peer and social acceptance ■ Wishes to try new skills without constant adult supervision ■ Signs of independence emerging ■ Success important for self-concept 	<ul style="list-style-type: none"> ■ Becoming entangled with machinery ■ Hearing loss from exposure to noisy machinery ■ Injuring head or spine in motorcycle and all-terrain vehicle accidents ■ Extra rider falling from tractor or other equipment 	<ul style="list-style-type: none"> ■ Potentially the most dangerous age because of constant risk taking and ease of distraction and clumsiness—never mistake a child’s size for ability to do work! ■ Enroll child in bike safety classes; always require helmets. ■ Set clear and consistent rules; discuss consequences and rewards. ■ Provide specific education on farm hazard prevention. ■ Plan increases in chores and responsibilities. ■ Start with low-risk tasks; give more responsibility for follow-through with less supervision. ■ Use JSA. 	<ul style="list-style-type: none"> ■ Hand raking, digging ■ Limited power tool use (supervision); hand tools better ■ Operating lawn mower (push mower, flat surface, under supervision) or garden tractor ■ Handling and assisting with animals

Table 3.2. Age appropriate activities (cont.)

Growth stage	Developmental characteristics	Causes of deaths/injuries	Preventive strategies	Developmentally appropriate work tasks
13–16 (adolescent/ young teenagers)	<ul style="list-style-type: none"> ■ Is growing rapidly and changing physically; can be an uneasy time ■ Girls growing faster than boys ■ Has moved from concrete thinking to abstract; enjoys mental activity ■ Can find solutions to own problems but still need adult guidance ■ Feels need to be accepted by peers ■ Resists adult authority ■ Feels immortal 	<ul style="list-style-type: none"> ■ Hearing loss from exposure to loud machinery ■ Head and spine injuries from motorcycle or all-terrain vehicle accidents ■ Machinery rollover/roadway accident ■ Amputation due to power take-off (PTO) entanglement 	<ul style="list-style-type: none"> ■ Judge size and age to measure maturity for tasks. ■ Be consistent with rules. ■ Provide education from peers with farm injuries. ■ Provide all-terrain vehicle training, protective gear. ■ Become involved in 4-H and FFA safety projects. ■ Use JSA. 	<ul style="list-style-type: none"> ■ Still needs adult supervision but ready for more adult jobs such as equipment operation and maintenance ■ Gradually increase tasks as experience is gained ■ Manual handling of feed and feeding animals ■ Can operate a tractor over 20 PTO horsepower or connect/disconnect parts to or from tractor at ages 14 and 15 after the completion of a 10-hour training program ■ Can assist with and operate (including stopping adjusting, and feeding) the following after completing a 10-hour training program: cornpicker, cotton picker, grain combine, hay mower forage harvester, hay baler, potato digger, mobile pea viner, feed grinder, crop dryer, forage blower, auger conveyor, the unloading mechanism of a nongravity-type self-unloading wagon or trailer, power post-hole digger, power post driver or nonwalking rotary tiller
16–18 (middle/ older teenage)	<ul style="list-style-type: none"> ■ Awkwardness overcome, mastery of small and large muscles basically complete. ■ Knows abilities, moving further away from family and into community as independent person ■ Feels immortal ■ May act like child one day, adult the next ■ Rebellion, risk-taking, aggressiveness typical behaviors ■ Consistent treatment from adults important ■ Needs independence and identity ■ Has increased sense of adult responsibilities, thinking of future ■ May experiment with drugs or alcohol 	<ul style="list-style-type: none"> ■ Same as adult risks: respiratory illness, hearing loss, muscle/bone injuries, rollover from tractor, machinery entanglements ■ Additional risk if experimenting with or under the influence of drugs and/or alcohol 	<ul style="list-style-type: none"> ■ Provide rules regarding drugs and alcohol; open communication. ■ Reward for accepting adult responsibilities. ■ Serve as role model—teach younger children farm safety. ■ Parents may still have cause for concern with recklessness and risk-taking and may work side-by-side with young adult until absolutely ready. ■ Use JSA. 	<ul style="list-style-type: none"> ■ May be ready to work with tractors, self-propelled machinery, augers, elevators, and other farm equipment, but must earn this responsibility. Should be trained, educated, and supervised at regular intervals.

Childhood Agricultural Fatality Assessment and Control Evaluation (FACE) Investigation Reports: This website presents cases of farm fatalities involving children in the US. OSH experts report on what went wrong and safety issues that could have been dealt with earlier, without the loss of human life.

Creating Safe Play Areas on Farms: This guidance document has been developed as a resource for safety professionals, farm and rural community leaders, and farm owners who want to understand important features of safe play areas for children who live on or visit farms, ranches, orchards or other agricultural settings. The focus is on children between the ages of 2 and 10 years old.

Youth in Agriculture: Agricultural hazards: This eTool describes common agricultural hazards and offers potential safety solutions that both employers and young workers can utilize to prevent accidents and avoid injury on the job.

15.5 Elderly

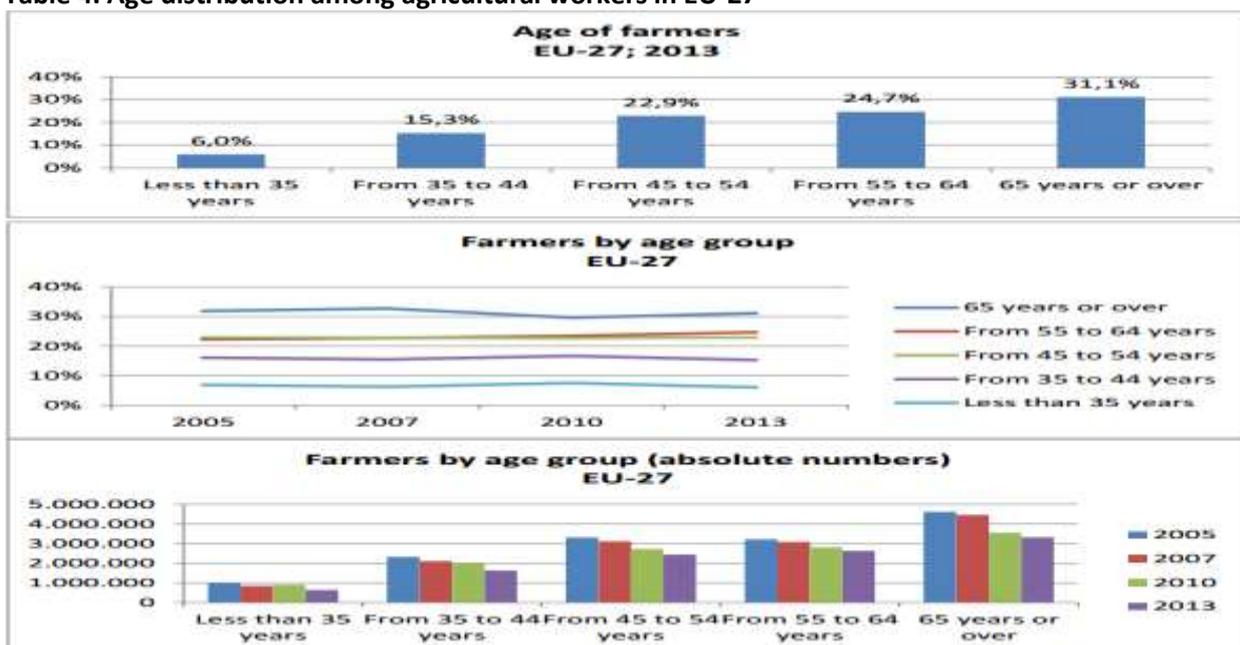
15.5.1 Introduction

The majority of EU farmers (for example, those responsible for the day-to-day management of a farm) were older than 55 years and only 6% were younger than 35 years in 2013. Almost one-third of all farmers are above the normal retirement age of 65.

The risk for fatal injury begins to increase at age 55. A review of trends of farm fatalities over a 12-year period (1992–2004) defined the range of fatal injuries in the under-55 age group with 18–20 per 100,000, while for those over 55 it was 45–55 per 100,000 annually (Myers, Layne & Marsh, 2009). At 65, the fatality rate is 58/100,000. The fatality rate continues to increase as farmers continue to work beyond 65. The age group 65–84 years is the highest risk age group for fatal injuries.

“Farmers do not retire because they find great satisfaction in work that gives purpose and meaning to their lives. For many, it is their life. Elderly farmers work 50–100% the amount of time worked by younger farmers, and they work with arthritis and hearing loss, among other geriatric health conditions (Peters et al., 2008)

Table 4. Age distribution among agricultural workers in EU-27



European Commission. *EU Farms and Farmers in 2013: an Update Retrieved from: https://ec.europa.eu/agriculture/sites/agriculture/files/rural-area-economics/briefs/pdf/009_en.pdf*

15.5.2 Why are The Elderly Vulnerable?

The elderly are inherently vulnerable because of their age, and this vulnerability increases as the age of the worker advances. Over the course of time, farm workers will have some degree of degeneration, possible chronic diseases, fatigue, and losses of other functions. Because farming is viewed as much more a way of life than as a profession, elderly agricultural workers often continue to work under poor physical and cognitive condition far past retirement age.

15.5.2.1 Deteriorating General Health

Epidemiology studies reveal that degenerative osteoarthritis (OA) is an important chronic injury issue in the elderly farmer. Generally, OA is associated with the aging process and heredity, and is exacerbated by long-term heavy workloads resulting in excessive chronic wear on the joint surfaces. The strenuous requirements of farm work may contribute to the development of OA. Specific risk factors include repeated lifting of heavy weights, kneeling, bending, squatting, long work hours, starting heavy work as a young person and continuing into years well past usual age of retirement (Mitchell et al., 2008)

Elderly farmers had a mean of 2.0 functions lost, compared to 0.61 functions lost for age-matched white-collar workers. Examples of function losses were demonstrated in a study of Kentucky (USA) farmers age 55 and older, which revealed that 34.2% had hearing loss, 11.4% had vision difficulty, and 50.4% had arthritis. The EU OSHA (2011) reports that almost 60% of workers in agriculture and fishing are exposed to poor or awkward postures for at least half of their working time, a contributing factor for the development of musculoskeletal disorders.

Some elderly farm workers fear discovering illnesses that may be either hard to treat or they may not have the access, income, and time to treat. Due to their age and the amount of time they have been active in agricultural work, elderly farmers are likely to think that any health damage that could be incurred in “already done” and will not seek treatment as they do not see the point in doing so (Engler, 2002).

15.5.2.2 Medication Interactions

Experimental and epidemiological evidence suggests that the use of certain medications is associated with the degradation of these sensorimotor skills and this may especially be true for farmers who are working in mechanized and other potentially high risk situations. Elderly farmers are more likely to be on existing medications to treat chronic or degenerative conditions. Many of these medications can be quite strong, and affect function.

Studies have shown that multiple drug use to treat a wide range of chronic and acute diseases can affect a person's orientation and coordination. Particular combinations of medication have been linked to an increased risk of impaired balance, falls and motor vehicle collisions. Medications that may interfere with an elderly worker's ability to perform their job safely include:

- Certain cold remedies
- Medications for depression
- Medications for anxiety
- Medications for stress
- Medications for sleeping problems
- Medications for heart disease
- Medication for muscle spasms
- Diuretics

- Potassium supplements
- (Canadian Agricultural Safety Association <https://casa-acsa.ca/sites/default/files/Aging%20farmers%20%20Final%20 2 .pdf>)

An additional concern with regards to medication is decreased levels of adherence. As the number of medications prescribed increases, there is a greater likelihood that proper continuation of the medication schedule may falter. This is also exacerbated with the fact that elderly people are more likely also to have lower levels of health literacy. Lack of adherence to physician recommendations can also increase the likelihood of physiological disturbances that could lead to misuse of dangerous equipment, falls, and tractor accidents. According to Katz (1997) physicians can provide effective patient education by

1. Limiting instructions to 3 or 4 major points during each discussion;
2. Using simple, everyday language, especially when explaining diagnosis and giving instructions;
3. Supplementing oral teaching with written materials;
4. Involving the patient's family members and friends; and
5. Reinforcing the concepts discussed

It is the physician's responsibility to assess whether a medication or combination of medications may result in an interaction which results in muscle weakness, drops in blood pressure, dizziness, or other side-effects that could jeopardize the physical safety of the agricultural worker. These risks must be communicated clearly to the patient, and strongly recommend avoiding working in certain physical environments in accordance to the medication schedule.

15.5.2.3 Falls

Falls are also a common cause of fatalities, especially in the group of farmers 65 and older. Many of these fatal falls are from tractors or farm equipment. Other causes of death are moving vehicles, other machinery, livestock, electrocution, or being struck by falling objects (Sprince et al. 2003)

Falls account for 18–21% of these injuries, compared to 5% for all other workers (US Department of Labor home page, 2015) Falls are dangerous to all elderly people, but due to the proximity to several hazards in agricultural settings, elderly farmers are particularly at risk.

The physician may provide a number of recommendations to elderly farmers to help prevent the likelihood of a fall (National Centre for Farmer Health, 2016):

- Attach extra grab rails on trucks, tractors, headers, ramps and steps.
- Use non slip tape on ladders, and non slip matting in the workshop; replace old steps with non slip metal mesh and a rail.
- Avoid heights where possible, but if you have to work at height, wear a safety harness.
- Install good lighting, especially around sheds.
- Wear well fitted boots with non slip soles.
- Tidy up workshops, don't leave clutter around.
- Keep paths and walkways clear.
- Keep as fit as possible as you may be less likely to fall if in good physical shape.
- Write a checklist of potential falling hazards at your farm.

The University of Sydney has prepared a set of tools and worksheets titled "Preventing Falls for Older Farmers" that may be helpful in guiding physicians on how to address this particular risk for this population. The packet includes a self-assessment of both personal and environmental risk for falls on farms, a series of physical exercises that may aid elderly farmers improve balance and mobility, tips for creating a safer physical environment, and provides an outline for the development of a plan in the case a fall should happen. This packet can be found at the below link:

http://sydney.edu.au/medicine/aghealth/uploaded/falls_resource.pdf

15.5.2.4 Use of outdated/unsafe equipment

Furthermore, the elderly often operate older machinery on the farm (more hazardous because it may lack modern safety features) with which they are more familiar. As a result, they handle more dangerous machinery whose safety standards may not be up to par and make them susceptible to greater injury as a result of malfunctioning equipment.

Prevention

Elderly farmer prevention should encourage short breaks and not working when ill, as fatigue and cold or flu can increase their risk of injury. The vaccination history for elderly farmer should be reviewed to assure that they are up to date for pneumonia, influenza, tetanus, and shingles immunization Certified Safe Farm home page. (North Carolina Agromedicine Insitute)

As elderly farmers in general (as most farmers do) work alone, they may have a significant risk of delayed treatment from an injury, and an increased risk for serious complications or death. There should be an emphasis to structure work so that the elderly do not work alone or a communication system should be in place (such as where and when the elderly person is working and times of expected return) or a portable communication device (cell phone or two-way radio) to alert need for assistance should it arise

Fall prevention measures include safe ladder usage and wearing a safety harness when working on high places, as well as high-quality lighting, especially where there might be trip hazards.

15.5.3 Additional resources for elderly farmers:

[IROHLA \(innovative Policies for Healthy Ageing\)](#): IROHLA is a project that focused on improving health literacy for older people in Europe. It took stock of on-going health literacy programmes and projects and identified and validated a set of 20 interventions, which together constitute a comprehensive approach for addressing the health literacy needs of the ageing population in Europe. These interventions are part of an evidence-based guideline for policy and practice for local, regional and national government authorities to start action.

[The Age Platform](#): a European organization devoted to anti-discrimination, equality, social protection, and active citizenship for elderly people. Their website provides more information about the situation of elderly people in Europe.

[UK Alzheimer's Society](#): The UK Alzheimer's Society has many useful factsheets and publications, for both health care providers and patients, with information and tools for coping with various aspects of dementia. The tools include helpcards with statements like 'I have dementia' and space for personal information for patients to carry with them.

[Mini-Mental State Examination \(MMSE\)](#): Diagnostic Tool, the most commonly used screen for cognitive impairment is the Mini-Mental State Examination, which can be administered in the primary care setting in approximately 10 minutes. For a more detailed diagnosis, a referral should be made to a neurologist or neuropsychologist. The results of screening tools have limitations, such as, reflecting the education level of the patient, or appearing normal in the early stages of the disease. (Folstein, Folstein & McHugh, 1975).

[REALM Health Literacy Test](#): A simple tool which can be applied in a clinical setting to measure health literacy, as it can be implemented and scored in as little time as 2-3 minutes. Words are arranged in three columns ranging from lowest to highest difficulty and by number of syllables. The healthcare worker then requests the patient say all the words they know, and sums the number of correctly pronounced words to tally a final score off of which the level of health literacy is determined.

15.6 Vulnerability Assessment Tools

There are a number of tools that physicians may be able to use in order to measure vulnerability in an occupational health settings. The Institute for Work and Health (Canada) created an occupational vulnerability questionnaire which physicians can use to help determine the level of vulnerability of the patient during consultation. Using a 5-point Likert scale, the tool assesses occupational health and safety vulnerability in four areas:

- Hazard exposure
- Workplace policies and procedures
- Worker awareness of hazards and OHS rights and responsibilities
- Worker empowerment to participate in injury and illness prevention.

Tool Access:

https://www.iwh.on.ca/system/files/documents/ohs_vulnerability_measure_questionnaire_2016.pdf

Tool Use and Guidelines:

https://www.iwh.on.ca/system/files/documents/ohs_vulnerability_measure_guide_2016.pdf

15.7 Conclusions and Recommendations

15.7.1 Conclusions

Vulnerability is a complex, intersectional concept that can vary in its application according to the national and cultural context of population. Despite lacking a formal definition in the field of agricultural occupational health, there are key components across varying fields which characterize vulnerability in a population. Broadly, we can describe vulnerable groups as persons who are disenfranchised or disadvantaged in one or multiple capacities which ultimately increase their risk of injury or disease at work. Factors which can increase an individual's vulnerability include: age, ethnicity, sex/gender, health status, national origin, income, and level of educational attainment. It is intersectional and it is not uncommon for an individual worker to possess multiple dimensions of vulnerability, thus it is important that the occupational physician be aware of the many ways in which different types of vulnerability may compound in the worker.

Risk factors for vulnerable populations can generally be categorized in two categories: endogenous and exogenous. Endogenous factors are those that are physically inherent to the worker and render them vulnerable (i.e.: size, physical strength, age). Exogenous factors on the other hand are those to which the worker is exposed to due to the nature of their work (i.e.: working with livestock, spraying pesticides). Again, these factors often overlap in vulnerable populations and it is important to assess both dimensions of risk factors in order to most accurately address the health and safety needs of the patient. While exogenous factors may be more easily ameliorated since the hazard can simply be removed, endogenous factors are more difficult and may require work adaptation or recommendation of additional precaution.

15.7.2 Recommendations

It is critical for the physician to be aware of the limitations and barriers a vulnerable worker must face in order to optimally complete their work while minimizing risk. Because of the broad spectrum of vulnerabilities an agricultural worker can possess, it is increasingly important for a physician to become well acquainted with the demographics of the population they are expected to work with. Questions physicians can and should ask themselves include for example:

- What is the age stratification of my patient population?
- What is the sex stratification of my patient population?
- Are my patients financially (in)dependent?

- What are the main countries of origin of my patients?
 - What religions do they practice?
 - What is their native language?
 - What ideas about health and safety do their cultures possess?
- What type of work is my patient population more likely to participate in according to their demographic characteristics?

While the physician may not be able to remove or ameliorate the factors contributing to their vulnerability, these questions would help to guide the type of recommendations or diagnoses appropriate for the patient. When appropriate, the physician may also conduct a vulnerability assessment using tools such as the one described above.

Ultimately, it is the responsibility of the medical professional to provide the most appropriate care for their patient. Informing themselves about the specific needs of the population which they serve, they are able to tailor their information and direct medical consultation to address specific issues and barriers caused by their vulnerability.

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