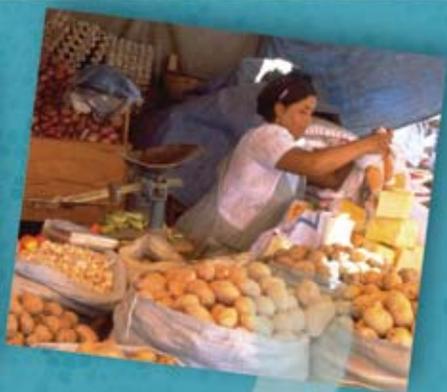


Gender Equality, Work and Health: A Review of the Evidence



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Gender Equality, Work and Health: A Review of the Evidence

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The planning of this publication began at a WHO Symposium entitled “Gender and Work-related Health Issues: Moving the Agenda Forward”, which Dr Östlin coordinated for WHO at the Women Work and Health Conference, held June 2-5, 2002, in Stockholm, Sweden. The contributions to the Symposium provided valuable input to this overview paper, and they covered: ‘Gender and health-related work concerns in agriculture’ by Dr Sophia Kisting, Occupational and Environmental Health Research and Education Unit, University of Capetown, South Africa; ‘Global gender issues in health and industrial work’ by Elisabeth Lagerlöf, European Foundation for the Improvement of Living and Working Conditions, Dublin, Ireland, and ‘Women sex workers’ lives and prescriptions for their health’ by Meena Shivdas, Gender and development specialist in Singapore. These papers were edited by Drs Östlin and Messing and can be found on the website of GWH on <http://www.who.int/gender/publications>.

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We hope that this collective work of women in the field of gender, work and health can make a contribution to all working women in the world.

Preface

Work – formal and informal, paid and unpaid – plays an important part in determining women’s and men’s relative wealth, power and prestige. This generates gender inequalities in the distribution of resources, benefits and responsibilities. The workplace can be a setting where gender inequalities are both manifested and sustained, with consequent impacts on health.

Work affects women’s and men’s bodies and minds in many ways. Workers can gain great satisfaction from their jobs, but they can also be exposed to hazards that can affect their health. Toxic chemicals may lead to cancer, reproductive problems, and even to death. Repetitive movements and heavy loads can damage bones, joints, muscles and nerves. Working in overly hot or cold temperatures can affect the cardiovascular and reproductive systems, causing pain and illness. Working under pressure with little power to change the work environment can cause psychological and physical distress.

All over the world, women and men suffer discomfort, disease, injuries and death from their work. In general, the problems associated with men’s work are better known, since men do visibly heavy and dangerous work such as mining, cutting trees, fishing and building. More recently, a number of risks have been identified in women’s work, and this publication presents some of these.

Increasingly, key studies have been undertaken examining the effects of the working environment on health, but this research has not yet touched on many of the extremely harsh conditions in which the majority of the world's women work, and the consequent harm to their health and that of their families.

Women will be more and more involved in the global workforce, in both formal and informal work

To bring more attention to gendered aspects of women's working conditions and health, the Department of Gender, Women and Health (GWH) organized, together with the Occupational and Environmental Health Programme (OEH) within the Department of Public Health and Environment (PHE), a WHO Symposium, entitled "Gender and Work-related Health Issues: Moving the Agenda Forward" at the Women, Work and Health Conference, held June 2-5, 2002, in Stockholm, Sweden. The purpose of the symposium was to discuss gender and women's health issues related to industrial work, agricultural work and sex work and to summarize key gender issues in work and health. The presentations at the symposium provided valuable input for this global overview paper.

This publication documents the relationship between gender inequality and health and safety problems. It reviews gender issues in research, policies and programmes on work and health, and highlights some specific issues for women, including the types of jobs they do, as well as their need to reconcile the demands of work and family. Biological differences between women and men also are considered in relation to hazards they face in the workplace. Implications of

the findings and recommendations for legislation and policy are discussed.

Women will be more and more involved in the global workforce, in both formal and informal work. In ensuring economic survival for themselves and their families they employ a variety of strategies, some of which entail great danger for their health. This review highlights the necessity to strengthen and put in place more and better programmes and practices so as to ensure women's health and safety at work, while facilitating their access to economic and social equality.

Claudia García-Moreno, GWH/WHO

Gerry Eijkemans, PHE/WHO



1. Introduction

Workers have always had to balance their need for income against their desire for healthy working conditions. This balancing act is becoming more difficult as the world moves toward a single global marketplace with intense competition. Both men and women need steady, well-paid employment to guarantee a future for themselves and their children. At the same time, as Lagerlöf points out (WHO, 2005), pressure to maximize profits has created a marketplace where good jobs are hard to find and keep. Fewer and fewer employers readily offer regular, permanent, well-paid employment. In the industrialized countries, labour organizations are weakened by pressures from global competition, while developing countries may attract investment by weak protections for the workforce.

In this highly competitive labour market, both women and men may find it impossible to ensure enough income to keep their families alive and healthy in the long term while insisting that their health be protected in the short term. This publication provides a global overview of gender issues in research, policies and programmes on work and health and highlights some specific issues for women. In particular, it will examine some apparent incompatibilities between women's struggles for economic and social equality and their need to protect their health.

2. The sexual division of labour: “Women’s” work and “men’s” work

During the last few decades the proportion of economically active women has increased dramatically in both developing and developed countries. According to World Bank estimates, from 1960 to 1997, women have increased their numbers in the global labour force by 126% (World Bank, 2001). Today, women make up about 42% of the estimated global working population, making them indispensable as contributors to national and global economies (ILO, 2000a; WHO, 1999).

Today, women make up about 42% of the estimated global working population, making them indispensable as contributors to national and global economies

However, women have moved into specific niches in the labour force (Anker, 2001; Östlin, 2002a). An examination of data for 200 occupations (1970 to 1990) shows that one third of all workers in Finland, Norway and Sweden would have to change occupations to eliminate occupational segregation by sex (Melkas and Anker, 2001), and a similar figure has been found in the United States of America (USA) (Tomaskovic-Devey, 1993). In paid work in the developing countries, women and men work at different tasks in agriculture (London et al., 2002; Kisting in WHO, 2005), mining, manufacturing and services (Acevedo, 2002; Parra Garrido, 2002). Women are more likely to work in the informal economy sector and they do specific types of informal work, such as domestic work, street vending and sex work (Acevedo, 2002, p. 84; Bumiller, 1990: Chapter 6; Shivdas in WHO, 2005). They may work from their homes, in which case their work is invisible and may not be considered as work even by the women themselves (Acevedo, 2002 :76-77).

In the industrialized countries, women and men also commonly perform different tasks and work in different sectors, although some job titles in white collar work are occupied by both women and men (Messing, 1998: Chapter 1; Anker, 2001). In some places, at some times, women lift heavy loads and men do most administrative work and in others, the situation is just the opposite (Bradley, 1989). There is also a “vertical” division of labour in many countries, where women occupy lower ranks than men (Acevedo, 2002; Theobald, 2002; Anker et al., 2003). A gendered division of labour is found within the household as well as in paid employment; women and men do different tasks in the home (Frankenhaeuser et al., 1991; Valls-Llobet et al., 1999). This work is apportioned differently in different countries.



The contractual relations involved in work also differ by sex. Women tend to work more hours at home and fewer outside of the home, compared to men, and they usually take primary responsibility for family well-being (Parra Garrido, 2002; Acevedo, 2002; Messing and Elabidi, 2003). Men in many countries do more seasonal work in fishing and forestry. In some countries, women are more likely to be unemployed but in others, men are more often without jobs.

In industrialized countries, there has been a rise in non-standard precarious forms of employment such as short-term contracts and subcontracting (Quinlan et al., 2001). Women hold specific types of non-standard work such as part-time work and one-person independent contracting (Cranford et al., 2003). Available evidence suggests that as a group, women suffer more from growing competitive pressures and cost-saving strategies, which can be associated with lack of security, limited possibilities for training and career advancement, and inadequate social security coverage in terms of old-age pensions,

sickness insurance and maternity protection (ILO, 2000b). Women are also less likely to be unionized.

The sexual division of labour is sometimes thought to obey “*natural*” laws, so that women do jobs that are more appropriate for their bodies and social roles. If so, the division of labour would be good for women’s health. But, if that were true, women would not be found in health care jobs that require them to lift heavy weights (patients) and to work at night. They would not be found in microelectronics plants that expose them to known reproductive hazards (Huel et al., 1990), and they would not be forced to work irregular, unpredictable schedules that seriously interfere with their family lives (Prévost and Messing, 2001). Their gender does not keep women from being exposed to hazards, but it does condition the types of exposures they experience (Messing et al., 1994a; Kennedy and Koehoorn, 2003).

For example, because of their different jobs and schedules, women and men may be exposed to toxins in different amounts and levels. In South Africa, women are exposed more often to pesticides during planting and harvesting and men during application (London et al., 2002; Kisting in WHO, 2005). Men’s jobs in factories can involve higher exposure than women’s to *toluene*, a chemical solvent that can cause various problems to the reproductive and nervous systems (Neubert et al., 2001). In factories and services in developed and developing countries, women and men are exposed to different physical and psychological stressors such as repetitive work, heavy lifting and monotony (Josephson et al., 1999; Messing, 2004; Acevedo, 2002). Women are the majority of those involved in health care, which involves risks of infection (including needlestick injuries), violence, musculoskeletal injuries and burnout (WHO, 2002; Seifert and Dagenais, 1997; Mayhew 2003; Josephson et al., 1997; Aiken et al., 2002). Women who are sex workers are exposed to risks of violence, sexually transmitted infections (STIs), including HIV, and other hazards (Nishigaya, 2002 and Shivdas in WHO, 2005). Women usually suffer discrimination and sexual harassment more often than men, especially

Women are more often found in sex work where they are exposed to risks of violence, infection and other hazards

if they enter non-traditional occupations (Cockburn, 1983; Paoli and Merllié, 2001). In Europe, it has been found that they are also more likely to suffer from intimidation including mobbing and psychological harassment (Paoli and Merllié, 2001).

The division of labour in unpaid work

Although women have always played an important role in the economy, their contributions have not been fully recognized in research and labour market statistics that traditionally focus on paid work. Since much of women's work, especially in low-income countries, is still performed in the informal economy and in the domestic sphere, it entails no direct payment and as a result it is often excluded from money transactions. According to calculations by the World Bank, \$11 trillion "earned" by women and \$5 trillion "earned" by men are missing from the global economy each year, representing the value of unpaid work as well as the underpayment and undervaluing of women's work (World Bank, 1995). Moreover, unpaid work, such as domestic work or work based in homes, entails no protective legislation, no social security, and is assigned low social status. This lack of income seriously affects women's ability to improve their lives.



The gender division of labour is as evident within the household as it is within paid employment. Women usually perform the daily tasks of cooking, cleaning the house, doing the laundry and caring for children and sick relatives, whereas men take care of car and household maintenance. In the home, one important characteristic of women's

work is that it cannot be postponed, and as a result, women’s leisure time is more fragmented than that of men (Frankenhaeuser et al., 1991).

However, women who play multiple roles in the family and the workplace appear to acquire self-confidence and economic and social independence that may outweigh the additional stress that comes from their heavy responsibilities (Barnett and Marshall, 1992; Pugliesi, 1995; Romito, 1994). On the other hand, women’s changing roles have also contributed to more role conflicts among certain groups of women such as managers (Kolk et al., 1999; Lundberg, 2002). Measurements of stress levels during and after work show that whereas men generally unwind rapidly at the end of the working day, women’s stress levels remain high after work, particularly if they have children living at home (Frankenhaeuser et al., 1989; Lundberg and Frankenhaeuser, 1999).

Health and safety issues arising from the sexual division of labour

Low pay is an ongoing difficulty for women in employment

Historically, the organization and design of paid labour have tended to be sex-typed. Equipment, tools and spaces used for paid labour have tended to be designed for men (Courville et al., 1992; Chatigny et al., 1995). Work scheduling has presumed constant availability of the worker, with no constraints arising from responsibility for child care or elder care (Prévost and Messing, 2001). Occupational health and safety standards have often used male models; for example, most toxicological data come from males (Setlow et al., 1998). Health and safety problems arising from unpaid work are not covered by compensation regulations.

Women have been restricted in their access to jobs. In many countries, they have historically not been allowed to work, or have been excluded from certain types of work or certain schedules, such as night work. Low pay is an ongoing difficulty for women in employment. Women are paid especially little in “women’s jobs” such as those in cleaning and

child care (ILO, 2003). Therefore, women are increasingly choosing to enter traditionally male jobs such as engineering and technical jobs, at least in North America (Asselin, 2003). Such women are exposed to discrimination, and this may put their health at risk, for example: their mental health may be directly affected, and they may feel forced to take risks in order to prove that they are able to do the job (Messing and Elabidi, 2003). There is some interest in determining whether women in newly desegregated jobs are at special risk for accidents and injuries, but evidence is as yet inconclusive (Messing et al., 1994b; Ore, 1998). If a special risk does exist, it could have arisen from an interaction between inappropriately designed tools, tasks and workspaces, as well as male-female size, and strength differences, (Messing and Stevenson, 1996).

While women in non-traditional jobs are at special risk, those in traditional jobs are also subject to discrimination on the basis of sex. In both situations, women may be reluctant to argue for full protection for their health, especially where the health problems concerned imply male/female differences, whether social or biological. For example, it has been shown that women in food processing in France and Canada subjected to cold and/or to irregular schedules have specific, sometimes incapacitating, problems associated with their menstrual periods (Mergler and Vézina, 1985; Messing et al., 1992, 1993). These problems can result in absence from work. Such absences could be appropriately treated through the occupational health and safety system, yet women have never argued for this. In fact, trade unionists approached about



this issue have felt that it would not be a good strategy to argue for inclusion of work-related menstrual problems in the occupational health and safety system, due to fears of a negative effect on employment possibilities for women.

Women are, however, relatively at ease in arguing for protection for possible damage to their fetus from dangerous working conditions (Turcotte, 1992). This may be because protecting children is seen as an appropriate maternal role. Also, according to an analysis of jurisprudence on reproductive hazards in Quebec, Canada, policy-makers are sensitive to safety issues for the fetus and take the view that “a pregnant worker has a member of the public in her womb” (Lippel, 1998).

Occupational health-related sex and gender differences

In order to make the workplace accessible to women and men with no discrimination, employers must take into account diversity among employees related to both biological and gender differences. On the other hand, some researchers have queried the focus on sex to the exclusion of other relevant population characteristics (Meinert and Gilpin, 2001). Biological sex differences should not be used erroneously to justify job segregation or inequitable health promotion measures.

Men are on average taller, larger and heavier than women, contributing to sex differences in average values of other important health-related variables such as blood volume and oxygen consumption. For example, sampling from populations at Canadian army bases indicates that women’s average wrist to index finger length is 170 cm and men’s is 183 cm (7.6% longer). The hands of about 92% of the women were shorter than that of the average man, and the hands of about 92% of the men were longer than that of the average woman. However, there was considerable overlap: 36% of the women’s and 46% of the men’s were between 170 and 183 cm

Biological sex differences should not be used erroneously to justify job segregation

long (Chamberland et al., 1998). The same physical load may exert greater strain on the average woman than on the average man, since women's average lifting strength is only 50% of men's (Vingård and Kilbom, 2001), although the difference for pushing and pulling in the horizontal plane is smaller (Snook and Ciriello, 1991). However, differences within a sex are much greater than differences between the average values for each sex; there is great overlap between women and men for all important physical differences. When designing tools, both the difference and the degree of overlap between women and men are important, if one wishes to minimize repetitive strain injuries attributable to hand-tool interactions (McDiarmid et al., 2000; Messing, 2004).

Women's and men's reproductive systems differ greatly. Women menstruate, become pregnant and nurse children, and these processes may be affected by workplace exposures. Men produce sperm, and this process is very sensitive to exposure to chemicals, vibration and radiation.

There may be sex differences in metabolism of toxins, but little knowledge on this is available (Setlow et al., 1998; Wizemann and Purdue, 2001). It has been hypothesized that the average woman is at greater risk of harm from fat-soluble chemicals because of a higher proportion of fat tissue, thinner skin and slower metabolism (Meding, 1998). Women are said to have an average of 25% fat by body weight, compared to 15% for men (Parker, 2000). However, even if body fat does prove to play a role, it is unwise to presume that an average sex difference applies to all or even most individuals in a population, (Messing, 2004). Exogenous hormones have different effects on women and men (Nilsson, 2000). No studies have carefully dissected out the relative contribution of differences in exposures, body size, fat composition and hormones to metabolism of chemical toxins. Also, the percent of fat varies among women and men according to age, physical fitness and training (Clarkson and Going, 1996). When

In order to make the workplace accessible to women and men with no discrimination, employers must take into account diversity among employees related to both biological sex and gender differences

anthropometric considerations are factored into consideration of the effects of exposures, the apparent gender differences may disappear (Stetson et al., 1992; Bylund and Burstrom, 2003).

Although not many psychological differences between women and men have been demonstrated scientifically, it has been suggested that men have higher self-esteem and confidence and that women are more emotionally expressive (Lindelöw and Bildt-Thorbjornsson, 1998). Male-female differences in education, socialization and upbringing may lead to differences in the way workers manage their illnesses (Alexanderson, 1998), their perception of risk (Gustafson, 1998), and the propensity to take sick leave or to seek treatment (Alexanderson et al., 1994, 1996). These effects, coupled with exposure differences and consequent differences in types of illness, may explain why women’s work-related sick leave lasts longer on the average than men’s (Islam et al., 2001).

***Male-female
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Thus, gender differences in exposure to risk factors and psychology may combine with sex differences in biology and varying social situations to produce gender-specific patterns of occupational health problems. It is therefore relevant and important to examine occupational health research, implementation of labour and occupational health legislation, labour market employment and work environment policies, programmes and projects with a gender lens.

3. Health implications of sex and gender differences

Studies, mainly from high-income industrialized countries show that women's increased participation in paid employment not only strengthens their social status and their individual and family's financial situations, but also is beneficial to their mental and physical health (Waldron et al., 1998). The same is true for men. Valkonen and Martikainen (1995) estimated that in a Finnish male cohort aged 30 to 54, 80% of all deaths, and 5% of circulatory deaths, could be attributed to the experience of unemployment. Among Russian men, life expectancy decreased by 6.5 years between 1989 and 1994, possibly as a result of increased unemployment leading to health-damaging behaviours, such as heavy alcohol consumption, smoking and violence (Shkolnikov et al., 2001).

Employment outside the home is an important source of social support and self-esteem, and helps women to avoid social isolation in the home (Romito, 1994; Razavi, 2000). A study from the Philippines showed that women who engaged in paid work improved the quality of their diets (Bisgrove and Popkin, 1996). Despite this general observation, many jobs, especially those available to women in low-income countries or to poor, less-educated women in high-income countries, expose women to harmful working environments.

Although paid employment is generally beneficial for both women's and men's health, work also involves exposures to risks and hazards

Employment outside the home is an important source of social support and self-esteem, and helps women to avoid social isolation in the home

that can impair health. These hazards are related to both physical (such as heavy lifting and carrying, repetitive working movements, sustained static postures, awkward postures, night work, long hours, violence, noise, vibration, heat, cold, chemicals) and psychosocial exposures (e.g. stress related to high mental demand, speed, lack of control over the way work is done, lack of social support, lack of respect, discrimination, psychological and sexual harassment). In developed countries, women are exposed to some physical hazards more often, such as highly repetitive movements, awkward postures, biological agents in hospital environments, and to intense exposure to the public in some jobs (Östlin 2002b; Messing, 2004).

In less developed countries, there are numerous hazards and regulations may be non-existent or ignored (Takaro et al., 1999). For example, in *maquiladoras*¹ in Latin America, women are exposed to chemicals, ergonomic hazards, noise and stress (Cedillo et al., 1997). In one study, 17% of women had a cumulative trauma disorder diagnosed on physical examination (Meservy et al., 1997). Almost twice as many women as men reported such disorders.

In general, women are exposed to some psychosocial risk factors at work, such as negative stress, psychological and sexual harassment and monotonous work, more often than men (Arcand et al., 2000). Due to their low status in the work hierarchy, women exert less control over their work environment, a condition associated with cardiovascular, mental and musculoskeletal ill health (Hall, 1989). The combination of paid and unpaid work affects women's health (Brisson et al., 1999). Consequently, work-related fatigue, repetitive strain injury, infections and mental health problems are more common among women than among men (Östlin, 2002a).

The dose and type of health-damaging factors vary tremendously among occupations and across countries, as well as between formal

¹ A maquiladora (or maquila) is a factory that imports materials and equipment on a duty-free and tariff-free basis for assembly or manufacturing and then re-exports the assembled product usually back to the originating country. <http://en.wikipedia.org/wiki/> accessed August 9, 2006.

Work-related fatigue, repetitive strain injury, infections and mental health problems are more common among women than among men

Table 1. Relative risk of some musculoskeletal disorders (with 95% confidence interval) in women compared to men

Reference	Population	Disorder	Relative risk odds ratio or prevalence ratio and confidence interval or probability
Chiang et al., 1993	Fish processing workers	Carpal tunnel syndrome	2.6 (1.3-5.2) ²
Park et al., 1992	Automobile manufacturing workers	Medically treated carpal tunnel syndrome	2.3 (1.6-3.3)
Bergqvist et al., 1995	Workers in routinized visual display unit work	Any arm or hand diagnosis (symptoms and signs)	5.2 (1.2-22.8) ³
Silverstein et al., 1987	Workers in seven manufacturing facilities	Carpal tunnel syndrome (symptoms and signs)	1.2 (0.3-4.7)
Armstrong et al., 1987	Workers in seven manufacturing facilities	Hand or wrist tendinitis (symptoms and signs)	4.3 (p<0.05) ⁴

2 Adjusted for job title or ergonomic exposure, at minimum, and for age and other factors, where possible, by stratified or multivariate analysis.

3 Odds ratio or prevalence ratio (and confidence interval or probability).

4 Only the p value and not the confidence interval was given in this study.

Source: Reprinted, with permission from Elsevier, from *Work-related musculoskeletal disorders: Is there a gender differential, and if so, what does it mean?*, 474-92, 2000.

and informal sector jobs. In addition, some worksite conditions, not in themselves hazardous, interact with biological or social characteristics to produce risks for specific populations. For example, a tool handle can be too large for the hands of smaller people (such as many women) and work hours can be too unpredictable for people responsible for child care (primarily women).

Therefore, it is hard to be precise about the origin of male/female differences in the prevalence of some diseases (Table 1).

Compensation for occupational health problems in the industrialized world

According to the International Labour Organization (ILO, 2005), each year an estimated 2.2 million men and women die from work-related injuries and diseases. Moreover, annually, an estimated 160 million new cases of non-fatal work-related diseases occur worldwide. These include cancer, respiratory and cardiovascular diseases, infectious diseases, musculoskeletal and reproductive disorders, and mental and neurological illnesses (Takala, 2002). Although the estimated aggregate figures are high, there are reasons to believe that the global burden of occupational diseases and injuries is heavily underestimated because of lack of adequate global data (WHO, 2002). Reliable information for most developing countries is scarce, mainly due to serious limitations in the diagnosis of occupational illnesses and reporting systems. WHO estimates that in Latin America, for example, only between 1 and 4% of all occupational diseases are reported (WHO, 1999).

The underestimation of women's work-related injuries and diseases is even more serious than that of men. Women's paid work is generally regarded as safe (Messing and Boutin, 1997; McDiarmid and Gucer, 2001), women's occupational injuries and illnesses are underdiagnosed (Kraus, 1995) and women's claims for compensation for some health problems are preferentially refused (Swedish National Board of Occupational Safety and Health, 1998; Lippel, 1999, 2003). Table 2 shows Swedish data on compensation by sex.

Table 2. Reported work-related diseases that have been assessed by the social insurance office in Sweden, 1994-1997

Assessment of cases	Women (n)	%	Men (n)	%
Approved	278	22.8	658	43.6
Not approved	941	77.2	852	56.4
Total	1 219	100.0	1 510	100.0

2 = 129.13, $p < 0.001$

Source: Swedish National Board of Occupational Safety and Health, 1998.

A breakdown by diagnosis shows even greater inequities: for women only 21% of the assessed musculoskeletal disorders' claims were approved compared to 38% for men. For mental illness, only 12% of the women's claims were accepted against 35% for the men's. Data from Quebec, Canada, show similar inequities for stress-related claims and those for musculoskeletal disorders (Lippel, 1999, 2003); however an examination of claims related to workplace violence showed an advantage for women (Lippel, 2001).

Another Swedish study revealed that women and men are often offered different rehabilitation measures for similar work-related health problems. Men, more often than women, receive education in their rehabilitation programme, and women receive rehabilitation benefits for a shorter period of time than men (Bäckström, 1997; Burell, 2002). Again, a similar study in Quebec showed that educational opportunities were more limited for injured women workers and compensation for inability to assume usual household responsibilities was more readily granted for household tasks usually done by men (Lippel and Demers, 1996).

In addition, women's work in many countries is still performed in the domestic sphere and in the informal economy, and is thus invisible in the public, economic, and institutional sphere. As a result, many of women's work-related accidents and diseases are not recorded as occupational, not compensated by work insurance systems and not included in thinking about occupational health.

...women and men are often offered different rehabilitation measures for similar work-related health problems

Occupational health problems of women in low-income countries

Knowledge of the health effects of working conditions in low-income countries is extremely sparse due to the lack of systematic research and the difficulties involved in setting up databases. It is, however, well known that most women in low-income countries still shoulder extremely heavy physical workloads in the household and outside of it.

Two important responsibilities of women are providing water and fuel for home use. These activities involve carrying heavy loads and walking long distances. In addition to musculoskeletal disorders, heavy lifting can lead to miscarriage and stillbirth, prolapsed uterus, menstrual disorders, and functional disability. Women's responsibilities for collecting water and washing in rivers expose them to water-borne



and water-related diseases and infections such as schistosomiasis (Michelson, 1993), malaria and worms (Kendie, 1992). Women cooking on open stoves not only are at risk of burns, but are also at high risk of illness due to smoke pollution (Mishra et al., 1990). Pollutants derived from commonly used fuels for cooking include carcinogens and other toxic substances. Another study from India suggests that the use of biomass fuels for cooking substantially increases the risk of active tuberculosis, particularly in rural areas (Mishra et al., 1997).

In many low-income countries there is a concentration of the female labour force in agriculture. Cash crop production of fruits,

vegetables and flowers involves exposure to toxic chemicals. Women and men in Africa are differentially exposed to pesticides, and women's exposures have a greater tendency to be invisible to health care personnel (London et al., 2002; Kisting in WHO, 2005). The adverse health effects of pesticide exposure include poisoning, cancer, skin diseases, abortions, premature births, and malformed babies, as

has been shown among floricultural workers in Colombia (Restrepo et al., 1990). Pesticides and chemicals are also widely used in high-income countries, where agricultural workers are often excluded from occupational health and safety legislation.

Increasingly women in the developing countries in Latin America and Asia work in office and factory jobs (Theobald, 2002). However, their work is given little value, which can be a source of stress (Meleis et al., 1996; Parra Garrido, 2002). The lack of social services makes the combination of paid work and family responsibilities extremely taxing, especially in developing countries where income is low and few services are available (Souza et al., 2002).

During the last decade an increasing number of studies have indicated adverse health consequences of sexual harassment at work (Kauppinen, 1998). A survey among nurses in a hospital in Turkey revealed that 75% of the nurses reported having been sexually harassed during their nursing practice: 44% by male physicians, 34% by patients, 14% by relatives of patients and 9% by others (Kisa and Dziegielewska, 1996). Sexual harassment may result in guilt and shame (Nicolson, 1996), anxiety, tension, irritability, depression, sleeplessness, fatigue and headaches (Wilson 1995), which in turn may lead to absenteeism, sick leave and reduced efficiency at work.

Numerous studies have shown adverse reproductive health outcomes among women exposed to pesticides, solvents and organic pollutants, heavy workload, postural factors and shift work (Sallmen et al., 1995; Nurminen, 1998). A special concern for women and their offspring is contamination of breast milk through exposure to chemical compounds being manufactured and used for industrial, agricultural and domestic purposes. In fact, breast milk analysis is an increasingly common method to monitor body burdens of persistent contaminants (Sims and Butter, 2002). For example, DDT in breast milk is reported to be associated with short lactation periods (Lanting, 1999). Lack of or limited breastfeeding is of concern, particularly in poor populations,

Women and men in Africa are differentially exposed to pesticides, and women's exposures have a greater tendency to be invisible to health care personnel

as it can have an adverse impact on infant health. It can also interfere with the fertility-suppressing effects of breastfeeding and increase a woman's chance of conceiving before she is ready.

Specific problems for men

A large body of literature indicates that employment is beneficial also for men's health and survival. There is also consensus that unemployment among men is associated with impaired mental health and with mortality (Valkonen and Martikainen, 1995).



However, men have many more occupational accidents than women, in all jurisdictions where data is available (Islam et al., 2001; Laflamme and Lilert-Petersson, 2001). Men die at work much more often than women, from violence as well as accidents (Helmkamp et al., 2000). In addition, men in developed countries report more exposure than women to noise, vibrations, extreme temperatures, chemicals and lifting heavy weights (Arcand et al., 2000; Paoli and Merllié, 2002). It is clear that many societies accept the idea that men can

...men have many more occupational accidents than women, in all jurisdictions where data is available

be asked to do more dangerous jobs, although this is not true on all continents.

The idea that their gender makes men more likely to be exposed to many risks at work has been raised by several authors (Cru and Dejours, 1983; Loukil, 1997; Kjellberg, 1998). In some countries, tensions may arise if men feel they are asked to do harder jobs (Messing and Elabidi, 2003), while in other situations, young men may readily accept requests to help older women do heavy lifting in exchange for technical help from the women (Assunçiao et Laville, 1996).

Gender stereotyping has affected research in reproductive health. In general, since reproduction has been viewed as women's domain, male reproductive health related to occupational exposures has been neglected (Wang, 2000; Varga, 2001). However, many chemicals, ionizing radiation, toxic contamination, high temperatures and possibly sedentary work have been identified as hazardous to the male reproductive system (Figá-Talamanca, 1998; Bonde and Storgaard, 2002).

4. Relevant legislation and policy

Legislation and policy involving sex differences includes protection of pregnant and nursing workers exposed to hazardous working conditions

The key areas in occupational health policy and legislation which are explicitly related to gender refer to two broad categories: the treatment of sex differences, and the methods for handling discrimination, including sexual harassment. Legislation and policy involving sex differences includes protection of pregnant and nursing workers exposed to hazardous working conditions (Heide, 2001; Lippel, 1998) as well as provisions concerning access to certain types of work that are seen to be more dangerous to women, such as night work. An ILO convention, adopted in 1948, prohibited night work for women, and certain national legislation incorporated these provisions, which are now incompatible with European equality law (Heide, 2001). While the European legal provisions governing night work will probably disappear with time, other countries, not bound by European law, may still prevent women from performing night work and other types of work perceived as inappropriate for women. Legislation governing discrimination in the workplace is prescribed both on a national and an international basis (Loutfi, 2001), and in many countries, aims to prevent both sexual harassment and discrimination, including discriminatory hiring practices that may rely on pre-employment tests of physical capacity, and limits on lifting weights (Messing et al., 2000; Demers and Messing, 2001). Jurisdictions vary in the degree to which they provide for sex-specific working conditions and programmes. The treatment of discrimination is also variable.

Aside from legislation overtly designed to apply to working conditions of women, it is also important to ensure a gender-based analysis of seemingly gender neutral legislation aimed to prevent or to compensate for occupational injury and disease. As mentioned above, even in countries where equality is guaranteed by law, application of occupational health and safety legislation may have discriminatory effects. Swedish and Canadian (Quebec), studies revealed that women and men are often offered different rehabilitation measures for similar work-related health problems. Men are more often offered training, access a wider variety of new jobs, and are offered more help in the home, while women receive rehabilitation benefits for a shorter time (Lippel and Bienvenu, 1995; Lippel and Demers 1996; Bäckström, 1997). Women may have more difficulty in accessing compensation for their injuries because of discriminatory effects of seemingly neutral criteria (Lippel, 1999, 2003). In many countries, claims for workers' compensation benefits for psychological problems or musculoskeletal disorders (more common among women) are sometimes excluded from the purview of the law or subjected to greater scrutiny than claims for injury attributable to a work accident (more common among men). This means that systemic discrimination may be at work even if the legislation appears to be gender neutral. When prevention priorities are determined by compensation costs, women are then less likely to benefit from protective legislation (Messing and Boutin, 1997).

Policy analysis should also take into account gender differences in precarious and non-standard employment. Specific health risks are associated with specific types of precarious or contingent work⁵ (Quinlan et al., 2001). Home-based work (Bernstein et al., 2001) presents very different challenges to those presented by temporary or part-time work (Butler et al., 1998). Sex distribution of workers in

Women may have more difficulty in accessing compensation for their injuries because of discriminatory effects of seemingly neutral criteria

⁵ Precarious employment is defined by Quinlan and others as jobs that do not correspond to the norm of fulltime, relatively secure employment performed at the employer's place of business during a specified time, usually during the day.

Sex stereotyping in the labour market usually results in increased risk to the health of both women and men

standard employment relationships and in different types of contingent employment varies considerably, with women predominating in some types of precarious work in some countries. In Canada, for example, women are more often in part-time work, less often in seasonal work and more often self-employed with no employees (Fudge and Vosko, 2001; Cranford et al., 2003; Conseil du statut de la femme, 2000). Policy applicable to specific types of contingent work, including part-time work (Heide, 2001) may be a surrogate for gender-based policies and should be scrutinized as such.

While women's claims for industrial disease are sometimes greeted with scepticism (Reid et al., 1991, Lippel, 2003), it has been shown that women workers with claims for musculoskeletal injuries profit greatly from organized support groups (Bueckert, 1999).

Special treatment for women?

The persistence of the sexual division of labour and of discriminatory practices raises the question of whether women should receive special treatment in occupational health and safety law. International bodies such as the ILO have declared themselves to be opposed to legislation purporting to *protect* one sex, since such legislation in fact results in inequities for one or both sexes. For example, legislation in Europe and North America preventing women from working at night did not prevent women from night work in traditionally female professions such as those in health care, but it did block women from well-paid jobs in the industrial sector.

In fact, sex stereotyping in the labour market usually results in increased risk to the health of both women and men. Risks in sex-specific jobs may be regarded as trivial for either sex. For example, it may be seen as appropriate for men in some countries to over-exert themselves in sex-stereotyped heavy physical labour, or for women to carry extremely heavy loads of water and firewood in other countries.

Rather than accepting stereotyping, it is preferable to adapt the workplace to diversity within and between sexes, ethnic groups, and age groups. The same is true for research practices.

5. Gender bias in occupational health research

Investigating the complex ways in which biological, social and environmental factors interact to impact the health of women and men should be a basic element of all health research, including research on work and health.

Many occupational health studies are gender-blind and label those who are the subjects for the investigation in such a way

Occupational health research – like other research such as pharmacological research – has been heavily criticized during the last decade for the general lack of a gender perspective, usually leading to the exclusion of women and their concerns. Researchers have failed to include women in studies, have adjusted for sex rather than examining its role in their data set, and have often not considered gender- and sex-specific factors when designing studies and analysing data (Zahm et al., 1994; Neidhammer et al., 2000; Messing et al., 2003). There is little knowledge of the prevalence and incidence of diseases, accidents and risk factors related to unpaid work, which mainly affects women (Östlin, 2002b). Many occupational studies are gender-blind and label those who are the subjects for the investigation in such a way that it is not possible to decide whether men or women or both sexes were included (Ekenwall et al., 1993). Gender-neutral expressions like *workers*, *subjects*, *employees*, *bus drivers*, *hospital orderlies* or *patients*, are frequently used. These kind of presentations strengthen the impression that sex and gender are irrelevant variables in the study, and that the research results can be applied to both women and men.

However, one must also caution about over-emphasizing gender differences, in relation to other effect modifiers in occupational health studies. Ethnicity, culture, social class, family type and age are among the many other explanatory variables that may be involved in processes that produce health or illness (Alexanderson, 1998; Meinert and Gilpin, 2001; Krieger et al., 1997).

Women are often overlooked, for example, in toxicological studies (Hansson, 1998). There are reasons to believe that occupational exposure limits protect women to a significantly lower degree than men. This is because *safe* levels of exposure to toxic substances have often been based on studies of healthy young men and these exposure limits have become a standard also for female workers (Messing, 1998).

However, in practice, researchers are confronted by the multiple interactions between genes and environment in producing human health. Body fat/muscle ratios, for example, are determined not only (or even primarily) by sex hormones, but by nutritional practices that are influenced by socialization of males and females in relation to the constantly changing and culture-dependent social demands for preferred body types for their respective sex. Nutritional and exercise practices, in turn, influence the secretion of sex hormones, with effects that vary with sex (such as amenorrhea among anorexics and athletes). In this complex situation it is especially important to concentrate on the putative mechanism by which a reported sex difference influences susceptibility to health problems.

The focus in occupational health research on paid employment fails to detect interactions between health hazards within the workplace and outside of it. For example, there is evidence that women with small children experience more stress at work compared to women with no such responsibilities (Coser, 1974). The research effort to include women in occupational health studies and trying to understand women's work-related health using solely a structural framework for

Women's work-related health cannot be understood without adding other frameworks related to gender roles and women's work in the domestic sphere

paid employment, has proved not to be adequate. Women's work-related health cannot be understood without adding other frameworks related to gender roles and women's work in the domestic sphere (Doyal, 1995, Orth-Gomér et al., 2000, Wamala et al., 2000).

Little attention has been paid in occupational health research to the simultaneous presentation of work-related diseases in one person (co-morbidity) and to the interaction between gender and other social stratifiers, like socioeconomic class, race and ethnicity (Sen et al., 2002). Numerous studies indicate the importance of collecting, analysing and presenting exposure and outcome data that not only allows basic desegregation by sex, but also allows cross-tabulation and classification between sex and social stratifiers such as socioeconomic group. By doing so, it becomes clear that there are considerable gender differences in exposure to risk factors and that social position can further compound this type of gender inequalities. While most risk factors in the work environment that contribute to socioeconomic inequalities in health among men contribute to inequalities also among women, there may be important gender differences as regards the social patterning of these risk factors (Östlin, 2002a).

Another important issue is that available research tools and methods in the field of occupational health have originally been developed in relation to predominantly male employment sectors, which means that these may not be valid when analysing women's jobs. For example, survey questions about working conditions are often designed for male-dominated working settings. As most occupational class schemes have been developed and adjusted for men, they differentiate only poorly between women's jobs (Messing et al., 1994a; MacIntyre and Hunt, 1997). Consequently, occupational title, often used as a surrogate for exposure data, is a somewhat better indicator of occupational exposures for men than for women.

The potential role of occupational health research in filling these gaps, and extending our understanding of observed differentials in various sub-fields of health, is central to developing effective policies and

As most occupational class schemes have been developed and adjusted for men, they differentiate only poorly between women's jobs

programmes. The prerequisites for conducting gendered occupational health research are the collection of sex-disaggregated data by individual research projects or through larger data systems (without appropriate sex-disaggregated data it is difficult even to begin a gendered analysis), attention to the possibility that data may reflect systematic gender biases (e.g. in access to occupational health services) and the use of methodologies that are sensitive enough to capture adequately gender dimensions (e.g. questioning methodologies, how we classify men and women into different socioeconomic categories).

6. Recommendations⁶

The following recommendations concerning research and policy elaborate, from a gender perspective, on the recommendations presented in the WHO global strategy of occupational health. Moreover, the authors suggest the adoption of new approaches in order to strengthen gender considerations in both research and policy.

Research

Databases

- 1 Sex-disaggregated data on both occupational exposures and occupational diseases and injuries need to be collected systematically at international, regional, company and union levels. Information should also be gathered on exposures and diseases related to unpaid work and on attempts at reconciling the demands of paid and unpaid work.

Research topics

- 2 Increased research on women's health at work is necessary, particularly in developing countries.

⁶ These recommendations are a synthesis of the recommendations made by Elizabeth Lagerloff, Sophia Kisting and Meena Shivdas in each of their review papers included in the bibliography, and those resulting from this global overview by Karen Messing and Pirooska Östlin.

- 3 The focus of occupational health research on paid employment fails to detect interactions between health hazards within the work place and outside of it. Women's work-related health cannot be understood unless the framework based on waged employment is complemented with frameworks related to gender roles and women's work in the domestic sphere, and to the interactions and interfaces between the two spheres.
- 4 Women should be included in occupational health research, especially in toxicological studies. However, any sex differences detected should be carefully examined with regard to the mechanisms involved, in order to separate true sex specificity from sex-specific exposures and effect modifiers.

Research tools and methods

- 5 Research tools and methods in the field of occupational health that were originally developed in relation to predominantly male employment sectors, must be validated and extended for analyses of women's jobs. In addition, tools and methods should be developed that are adapted to conditions found more often among women workers, such as extremely fast movements, reconciling work and family, relations with clients, and sexual harassment.
- 6 New gender sensitive indicators should be developed for work-related health outcomes. Available indicators of working conditions do not fully capture the particular features that characterize much of women's employment, and may be biased in their focus towards working conditions that characterize male-dominated areas of activity. Disorders resulting from psychosocial pressure at work should be better diagnosed and reported. Two areas are of special concern, namely the development of indicators that explore the positive and negative impact of "caring work" and better measures in relation to intimidation, harassment and discrimination, particularly in customer-based work.

- 7 Reporting and monitoring of these indicators should be improved.
- 8 In developing countries there is a need both to develop reporting systems and to ensure that they cover women's occupational diseases and injuries, and work-related diseases.
- 9 Participatory approaches in occupational health research should be ensured, where both women and men workers are given an active role to ensure that research being undertaken is relevant to their needs and interests.
- 10 Interdisciplinary research with strong epidemiological, ergonomic and social science components is essential for understanding gender issues in occupational health.

Occupational health policies and programmes⁷

- 11 The sphere of working life, in all its forms and domains, is probably one of the most important arenas for action if our objective is to improve the health status of populations in general and to reduce gender inequalities in health in particular. There is an urgent need to use available information and knowledge to intervene for the protection of the health of the working population. The current context of globalization of the economy and the associated weakening of workers' bargaining power has led to an increase in precarious work, particularly for women.

Changing the context

- 12 Given the important role that the gender segregation of labour plays in determining women's and men's status in society and its importance for maintaining gender inequities in earnings, gender roles and sex stereotyping of jobs, reducing both horizontal and vertical sex segregation of work should receive urgent and priority

7 See also WHO Global Strategy on Occupational Health for All, 1995.

attention by policy-makers. Low wages and incomes that accompany occupational segregation by gender are an increasingly important contributor to poverty and inequality in society as a whole. Children's living conditions are negatively affected because an increasing proportion of households are headed by women.

- 13** Given the current image of women's work as easy, "light" and harmless", it is important to enlighten the public about the fact that women's work often involves health risks. In addition, the large percentage of women in precarious work, in the informal economy, and in the economic free trade zones, as well as the increasing gender gap in wages must be made visible. This is particularly important now as globalization leads to more and more gender-segregated jobs, as for instance in the economic free trade zones, where women are employed in highly repetitive, low-level jobs. Inducing such a change in perspective needs collaborations with international consumer groups, free trade associations and international social partners.
- 14** Addressing the occupational health needs of both women and men requires commitment and close collaboration on the part of the various international agencies concerned, such as WHO, ILO, FAO and other UN agencies, as well as relevant non-governmental organizations (NGOs). Regional and national initiatives for cooperation between WHO and other UN agencies need to be strengthened.

Changing international and national policies

- 15** International and national occupational health policies for work performed both in the public and domestic domains should be strengthened and the necessary policy tools should be developed.
- 16** Workers should be given a more active role in developing policies to promote healthier workplaces, and men and women should have

an equal place in the process. In countries and situations where women are not involved in unions or are not well represented by them, grass-roots women's organizations representing women workers should be involved.

- 17** The focus of policy and programmes should be on practical problem-solving at the workplace and local capacity-building involving workers of both sexes, employers, primary or occupational health service providers, and government officials.
- 18** Gender-sensitive national policies for health at work and development of policy tools should be developed and strengthened. Special concerns should be devoted to gender assessment of existing legislation and policies including threshold limit values, physical work loads, and risks within female-dominated occupations. Violence and harassment at work must be regarded as work related.
- 19** Workers' compensation schemes for occupational accidents and diseases should be reviewed from a gender point of view, in order to examine whether and why the rate of approval of compensation claims differs between women and men for the same type of work-related injury or disease. Furthermore, it is important to identify which occupations and types of work are exempt from compensation coverage and whether they are female-dominated. Compensation programmes – and occupational health prevention programmes – should also address both physical, chemical, ergonomic and psychosocial risks to female and male reproduction, including female and male fertility and sexuality.
- 20** Programmes that will ensure greater economic independence and food security for rural agricultural workers should be encouraged. It is essential that sustainable agricultural policies (such as organic farming) be supported and unsustainable policies (such as the use of hazardous chemicals) be discouraged.

- 21** Family-friendly policies need to be strengthened in all countries in order to promote gender equality at work. These policies should provide support for child care, elder care, maternity and paternity leave, support for women during maternity and on return to work, the possibility to nurse infants, the possibility for flexible starting and finishing times determined by the worker, and the possibility for flexible leave arrangements and career-break schemes determined by the worker, tele-working and home-working. Measures should be taken to prevent irregular, unpredictable work schedules over which the employee has little control.
- 22** Women's equal access to unionisation should be facilitated, as unions are an important means for health and safety intervention. Interventions in occupational health and safety should involve unions where they exist and ensure worker representation if unions are not present.

Changing workplace practices

- 23** Industrial work involves multiple hazard factors which must be reduced. There should be a focus on primary prevention and employers are responsible for reducing exposure for all workers. This should happen with unions and other associations of workers. Women workers must be consulted specifically during these efforts, to ensure that all of their job-related risks are included in prevention.
- 24** Interventions to protect the health of sex workers should be carried out in partnership with the workers themselves. Their participation in the planning and implementation of interventions assures the appropriateness of design and implementation, and more importantly, recognizes that women sex workers are in a position to provide valuable insights to researchers, academics, healthcare practitioners, policy-makers and activists.

25 Union-sponsored activities should take into account women's special needs, such as family-friendly schedules, leadership training and opportunities to intervene easily during union meetings. Within unions, women's committees should be formed to stimulate discussion on women's specific needs.

Occupational health and safety training and capacity development

26 Information and education about women's occupational health and safety risks should be improved both within the occupational health and safety community, and also within the community at large (physicians, nurses, health inspectors, others).

27 Gender-sensitive education and training materials on occupational health and safety should be developed, tested with practitioners and workers, and used. The educators and trainers should themselves be trained in gender-sensitive analysis.

28 Capacity should be developed for gender-sensitive interventions in occupational health, based on information from gender-sensitive research. Students should be trained on how to ensure that research and intervention are gender sensitive. Since these students may be women, efforts should be made to make it possible for them to reconcile training with family obligations. International aid organizations should allow funds specifically for child care, maternity leave, and other needs of women students with families.

29 Equal opportunities for women and men workers should be provided to enable them to participate and intervene in their workplaces in an informed manner.

30 Regional and national Occupational Health and Safety days should be used to popularize occupational health and safety in all sectors

and programmes. Culturally-sensitive means such as calendars, popular theatre, posters, and community radio programmes should be set up with the participation of male and female workers.

- 31** Gender-sensitive occupational health and safety material should be included in adult basic education courses and in the secondary school curriculum.

Occupational health service delivery

- 32** Occupational health services, with a strong focus on primary prevention, should be strengthened, in both female and male dominated workplaces. Strengthening of support services for occupational health (e.g. through capacity building of health care providers in primary health care) is needed, especially for home workers.
- 33** Access to occupational health facilities should be made equitable for both women and men, irrespective of job title.

Legislation and ethical norms

- 34** In low-income countries, effective workplace health and safety regulations often do not exist, or if they do they are not enforced, especially in the informal sector where many women work. New approaches and strategies are needed that would encourage stakeholders to enforce these regulations.
- 35** Existing occupational health standards should be reviewed through a gender lens and adjustments should be made based on scientific-risk assessment among women and among men, considering the various mechanisms underlying observed male-female differences.

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