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PSYCHOSOCIAL RISKS AND WORK-RELATED STRESS IN DEVELOPING COUNTRIES: HEALTH IMPACT, PRIORITIES, BARRIERS AND SOLUTIONS

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Abstract

Objectives: The current research explores experts' perceptions of psychosocial risks and work-related stress in emerging economies and developing countries[1]. This paper focuses on knowledge of potential health impact of psychosocial risks and preliminary priorities for action, and discusses potential barriers and solutions to addressing psychosocial risks and work-related stress in developing countries. **Materials and Methods:** This research applied a mixed methodology including semi-structured interviews, two rounds of an online Delphi survey, and four focus groups. Twenty nine experts with expertise in occupational health were interviewed. Seventy four experts responded to the first round of an online Delphi survey and 53 responded to the second round. Four groups of experts with a total of 37 active participants with specific or broader knowledge about developing country contexts participated in focus group discussions. **Results:** High concern was expressed for the need to address psychosocial risks and work-related stress and their health impact. Developing country experts' knowledge about these issues was comparable to knowledge from industrialized countries, however, application of expert knowledge was reported to be weak in developing countries. Socio-economic conditions were regarded as important considerations. Priorities to be addressed were identified, and barriers to implementing possible solutions were proposed. **Conclusion:** The future research and action paradigms in relation to psychosocial risk management will need to be broadened to include the larger social, political and economic contexts in developing countries beyond issues focusing solely on the working environment. Work-related psychosocial risks and the emerging priority of work-related stress should urgently be included in the research and political agendas and action frameworks of developing countries.

Key words:
Psychosocial risks, Work-related stress, Developing countries, Health outcomes, Policy development, Globalization

INTRODUCTION

Over the past decades, the world has seen a shift of industry and services to developing countries. This often seems to be connected to higher productivity and multinationals have been reported to often enjoy the absence of (or presence of weak) regulatory systems to benefit their profit margins [1,2] resulting in jobs hazardous to workers' health. Generally, the growth of large multinational companies has been accompanied by greater decentralization, outsourcing and flexible work environments, with wide variations in the conditions of work and in exposure to occupational hazards [3] and linked to poor working conditions followed by high incidence of occupational diseases and accidents. Voyi stresses that poorer countries remain indebted to the rich, so resources are ever-scarce for their own development, which causes an ethical vacuum and a negative impact on workers' health. Without effective interventions internationally, the process of globalization could be used to take advantage of vulnerable people [4].

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[1] As of here referred to as 'developing countries'.

Voyi's argument becomes even stronger with the fact that 80% of the world's GDP is produced in industrialized countries and only about 20% in developing countries. In other words, one fifth of the world's working population produces four fifths of the world GDP [5]. It follows that wealth and prosperity are extremely unequally shared between developing and industrialized countries. This is despite the fact that 80% of the global workforce resides in the developing world [6], and is employed in unhealthy and unsafe working conditions [7].

Already in 1995, the World Health Organization alerted that approximately 30–50% of workers report hazardous physical, chemical or biological exposures or overload of unreasonably heavy physical work or ergonomic factors that may be hazardous to health and to working capacity; an equal number of working people report psychological overload at work resulting in stress symptoms [8]. Worldwide there is no evidence that there has been any improvement of this unacceptable situation.

So why is still so little being done? Some experts reiterate that the inadequacy of funding allocations impedes the development of international occupational health, partly due to the fact that other health issues compete with occupational health [9]. Another general issue pertains to the fact that occupational diseases emanating from physical and psychosocial hazards are not included in the definition of easily preventable diseases. In fact, decision-makers in most developing countries still perceive occupational health as a luxury, which is one reason for lack of political action [10], poor data collection, and weak enforcement of occupational health and safety regulations. These emerging trends are accompanied by the growth of service industries which has been associated with an increase in stress-related diseases [11].

Work-related stress in developing countries is one of the areas which have not yet been quantified owing to lack of data on exposure or causality, important exposures and outcomes [12]. The lack of research in this field and the struggle with other well-known and traditional occupational risks (chemicals, biological and physical hazards) may present one major barrier that prevents developing countries from developing awareness and addressing and controlling emerging health concerns such as work-related stress and its consequences.

On the one hand, there is no one common global denominator and language on the topic of stress, but only a more general understanding of the phenomenon (especially when comparing industrialized countries with developing countries). On the other hand, it is well documented in industrialized countries that have an abundance of research that psychosocial hazards have the capacity to affect the physical, mental and social well-being of workers and that there are a number of real risks involved. However, there is a true gap of coherent research in developing countries to provide an insight into the nature of work-related stress and the psychosocial working conditions that may cause it.

Knowledge in this area in industrialized countries is a result of the accumulation of data consistently pointing to the high prevalence of these issues in the modern workplace. In Europe, for example, the fourth European Working Conditions Survey [13] found that from a sample of 21 000 workers, 28–29% reported that work-related stress affected their health. Mental health problems and stress-related disorders are the biggest overall cause of early death and overall health concern in Europe [14]. In 2001, the European Council of Ministers concluded that "stress and depression related problems […] are of major importance […] and significant contributors to the burden of disease and the loss of quality of life within the European Union". They underlined that such problems are 'common, cause human suffering and disability, increase the risk of social exclusion, increase mortality and have negative implications for national economies'. Subsequent action by the European Social Partners resulted in two framework agreements on work-related stress [15] and on harassment and violence at work [16].

Awareness and action in developing countries is far off the successes experienced in the industrialized world. Undoubtedly there are potential differences in the awareness and knowledge about prevention of work-related stress and psychosocial hazards in industrialized as opposed to developing countries. The scarcity of research does not facilitate the understanding of these differences, although some studies

Table 1. Interview participant demographics (participant distribution — 29 expert interviews)

Global region*	N	Countries discussed
African region	8	Namibia (4)**, Nigeria, South Africa (2), Zambia
Americas	5	Trinidad and Tobago, Chile, Colombia, Mexico, Puerto Rico
Europe	2	Albania, Macedonia
Eastern-Mediterranean	5	Iran (3), Tunisia, Pakistan
South-East Asia	6	India (3), Malaysia, Thailand (2)
Western-Pacific	3	China, Federated State of Micronesia, Vietnam

* According to the WHO Global regions.
** The number in brackets are the number of nationals who participated in the study if more than one participant.

from developing countries have replicated findings of studies in industrialized countries [e.g., 17–19]. To obtain a better general understanding, and pave the way for including these emerging issues into the research and political agenda of developing countries, this research drew on developing country expert knowledge pertaining to the importance and impact of psychosocial risks and work-related stress in the developing country working environment.

MATERIALS AND METHODS

Study population

Experts from developing countries were actively recruited from all global regions as proposed by the WHO categorization[2] to collect a suitable breadth of data, and yield a more holistic representation of the developing world context. They completed an online registration form with the following criteria: (a) expertise in a field related to occupational health; psychology, sociology, epidemiology, medicine, psychiatry, etc.; (b) number of years of experience in their respective field; (c) basic knowledge on workplace interventions and/or legalisation on psychosocial risks at work; and (d) a degree of practical experience in the application of methods or interventions that concern psychosocial risks at work.

Expert interviews

An interview schedule was developed based on a scientific literature review. This paper discusses key findings in relation to three questions that explored the respondents' understanding and conceptualization of work-related stress and psychosocial risks, one question that assessed the level of concern attributed to these issues within the context of the developing world, one question that asked about effects on health of psychosocial risks and work-related stress, and a last question that addressed urgent workplace priorities for action. Twenty nine individuals from developing countries were interviewed. Table 1 outlines the participants' demographics. Thematic analysis was applied to analyse the interview data.

Delphi surveys

A two-tiered investigation based on the Delphi survey methodology aimed at further exploring key issues identified in the interviews to complement the empirical exploratory data. The goal of the Delphi process is to systematically facilitate communication of information via several stages and to define priorities with respect to the research area. Seventy four individuals responded to the first online survey. Before the second round, the survey answers were analyzed and a choice of ten answers for each question retained, which represented the highest results yielded from the first round study. These were used to design the questionnaire for the second round of the Delphi study to which 53 respondents replied.

Table 2 outlines the demographics of the participants. Respondents were asked to rank their answers in the order of most important to least important. The ten top choices were prioritized and the five highest results were retained

[2] The Americas (AM), the African (AF), Eastern-Mediterranean (EM), European (EU), South-East Asian (SEA), and Western-Pacific (WP) regions.

Table 2. Delphi I and II participants

Regions	Participants		Professional background*
	Delphi I	Delphi II	
Primary region	AF (11)**	AF (3)	Psychiatry, social work, medicine, psychology, epidemiology, OH expert, sociology, ergonomics Others: environmental management/ OH&S (hazard identification/risk assessment); HR development & organization development; work-organizational psychology; environmental health, OH psychology; anthropology and development; organizational behaviour/HR management; OH&S; social epidemiology; health psychology; social psychology; stress & health; work physiology, occupational medicine
	AM (14)	AM (8)	
	EM (4)	EM (5)	
	EU (29)	EU (24)	
	SEA (7)	SEA (7)	
	WP (9)	WP (6)	
Secondary region, if indicated	AF (11)	AF (6)	
	AM (13)	AM (10)	
	EM (5)	EM (5)	
	EU (30)	EU (19)	
	SEA (7)	SEA (9)	
	WP (8)	WP (4)	
Countries including primary and secondary regions	AF: Angola, Botswana, Burkina Faso, Ghana, Kenya, Namibia, Nigeria, South Africa, Uganda, Zimbabwe AM: Australia, Canada, Chile, Colombia, Haiti, Mexico, Panama, Puerto Rico, Trinidad and Tobago, United States of America EM: Afghanistan, Brunei Darussalam, Egypt, Iran (Islamic Republic of), Pakistan, Tunisia EU: Albania, Belgium, Bosnia and Herzegovina, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Ireland, Kyrgyzstan, Lithuania, Netherlands, Poland, Portugal, Norway, Spain, Sweden, Switzerland, Turkey, UK, USA SEA: India, Indonesia, Nepal, Republic of Korea, Sri Lanka, Thailand WP: Australia, China, Malaysia, Micronesia (Federated States of), Viet Nam		

According to the WHO classification of the world: AF — African region; AM — Americas; EM — Eastern Mediterranean; EU — Europe; SEA — South-East Asia; WP — Western Pacific region.
* The Delphi survey provided the possibility for several choices.
** The number in brackets are the number of nationals who participated in the study.
OH — Occupational Health, OH&S — Occupational Health and Safety.

for data analysis and development of graphs. The analysed results yielded indications for priorities for research as identified by the participants.

Focus groups

Four focus groups with multi-disciplinary experts, with expertise, or related expertise, in occupational health were held between March and November 2008. Thirty seven active members contributed to the discussions. They were from, or had broad knowledge about, developing country working environments. Table 3 outlines the participants' backgrounds. Focus groups are based on a technique that involves the use of in-depth group interviews and discussions about a particular topic. At this stage, preliminary findings are presented.

RESULTS

Understanding of psychosocial risks

Findings from interviews, a two-tiered Delphi survey, and focus groups contributed to a reasonably good understanding of psychosocial risks and work-related stress. The two concepts seemed interchangeable and participants did not make significant distinctions between

Table 3. Focus group participants

Sex	Primary country or country of origin	Secondary country or developing country best known	Professional background	N
F	Australia		Occ Psychologist	3
F	Australia	Malaysia	Ergonomist	1
F	Chile		OH expert	1
M	China		Occ Health Medicine	1
F	China		OH expert	1
M	China		OH expert	2
F	Colombia		OH expert	2
M	Colombia		OH expert	1
F, M	Egypt		OH expert	2
F	Germany		Occ Psychologist	1
M	Germany	India	Occ Health Medicine	1
F	Hong Kong		Occ Psychologist	1
M	India		Occ Psychologist	1
F	India		OH&S expert	1
M	Mexico		OH Expert	4
M	Nigeria		OH Expert	1
M	Panama		OH Medicine	1
F	Peru		OH Expert	1
F	Philippines		OH&S expert	1
F	Poland		OH Expert	1
M	Portugal		Occ Psychologist	1
F	Serbia		Occ Psychologist	1
F	South Korea		Occ Health Medicine	1
F	Taiwan		OH expert	1
F	Turkey		OH&S expert	1
F	UK		Occ Psychologist	1
F	Ukraine		Psych Therapist	1
F	USA	African country	Occ Psychologist	2
Total				37

F — female, M — male.
Occ — Occupational, OH — Occupational Health, OH&S — Occupational Health and Safety.

them. They were explained in terms of work content and work context. Work content pertains to the working environment and conditions[3] and employment conditions[4]. Work context includes the organization of work, work schedule, physical safety provisions and interpersonal relationships. Macro issues, beyond the workplace, were also reported and included socio-economic conditions such as conflict, poverty, job insecurity, unemployment, social, political, economic, cultural and religious structures, the prevalence of HIV/AIDS, and the impact of globalization. All participants responded that psychosocial risks are of concern to workers' health and should be addressed in developing countries. Table 4 provides the details.

[3] General conditions of work define, in many ways, people's experience of work. Minimum standards for working conditions are defined in each country but the large majority of workers, including many of those whose conditions are most in need of improvement, are excluded from the scope of existing labour protection measures. Source of extract: http://www.ilo.org/public/english/protection/condtrav/wordcond/index.htm

[4] Conditions or circumstances in which a person is engaged in a job or occupation. Very frequently this involves an agreement or relationship between an employer that hires workers and an employee who offers his/her labour power… in poor countries agreements are not explicitly subject to any contract, and the informal sector employment forms a high proportion of total employment. Source of extract: World Labour Report 2000. Income security and social protection in a changing world. Geneva: ILO; 2000, and other sources.

Table 4. Understanding of psychosocial risks and work-related stress. Results from interviews, Delphi survey, and focus groups

Themes	Psychosocial risks
Working environment; working & employment conditions	low salary; poor leadership; lack of advancement & sustainability; lack of fairness; poor working environment & conditions
Work organization	lack of control over work processes and the job in general; high work load/demands; work-home interface challenges; discrepancies between abilities, skills, job demands, expectations; poor management practices; lack of participation in decision-making; perceived imbalance; lack of research
Work schedule	work schedule; shiftwork; hours worked; time constraints/speed/pressure
Workplace safety/hazards	poor physical conditions; physical & physiological hazards
Relationships	psychological & sexual harassment; physical violence; physical (3rd party) violence; relationships/interpersonal conflict; poor social support
Socio-economic conflict/conditions	war, crime, poverty, life stress; migrants in informal work; welfare (absent, weak); HIV/AIDS (absenteeism); job insecurity & unemployment; economic & job condition; precarious work; low employment; threat to employment due to globalization; globalization (market competition, multi-nationals, delocalization of companies); lack of local level policy focus; social, political, economic, cultural, religious structures (existing & changing)
Concerns for workers' health?	yes (100%)

Potential health impact of psychosocial risks in developing countries

Data from the interviews on health outcomes that relate to psychosocial risks and work-related stress pointed to three main themes: physical and mental health impact, and behaviours affecting health outcomes. Participants stressed the interrelationship between mental and physical health outcomes as outlined in Table 5.

Priorities for action

Priorities concerning urgent workplace issues and occupational risks that need to be addressed in developing

Table 5. Health outcomes from exposure to psychosocial hazards & work-related stress. Results from expert interviews

Themes	Health outcomes
Physical health	heart & circulatory
	gastro intestinal
	musculo-skeletal disorders
	headaches/migraines
	dermatological & respiratory symptoms
	disability/injuries
	diabetes
	ulcers
	certain cancers
Mental health	depression; anxiety; emotional problems
	suicide/suicidal behaviours
	mental disorders (generally)
Adverse health behaviours	substance abuse
	smoking
	obesity
Stress and several health outcomes	physical & mental health (interrelationship)
	fatigue/sleep problems (physical & mental)

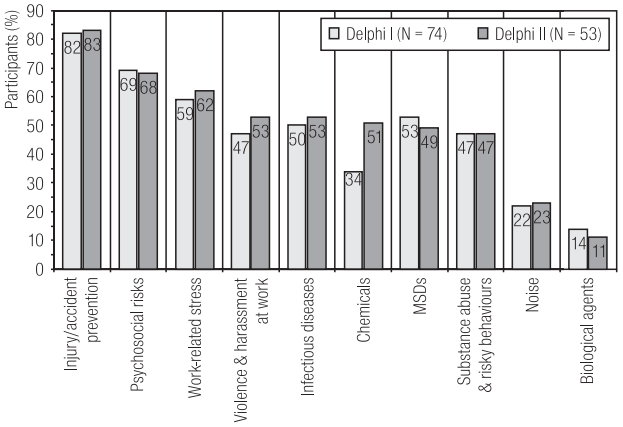

Fig. 1. Which workplace issues and risks require urgent attention in developing countries?

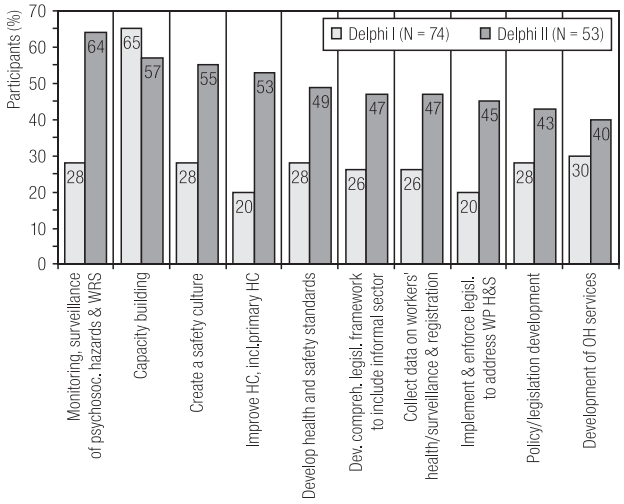

Fig. 2. What are the prority areas for action in addressing OH&S in developing countries?

countries are listed in Figure 1. Occupational health and safety priorities for action are listed in Figure 2. The figures present the top ten priorities as identified by the participants through the Delphi survey. Workplace issues and occupational risks that were reported as the ones requiring most urgent attention were injury and accident prevention followed by psychosocial risks, work-related stress, and violence and harassment at work. Priorities for action in occupational health and safety clearly point to the need for capacity building, as well as monitoring and surveillance of psychosocial hazards and work-related stress, followed by the creation of a safety culture, the improvement of health care, the need to develop health and safety standards, the development of occupational health services and of a comprehensive legislatory framework to include the informal sector.

Barriers and solutions to addressing psychosocial risks and work-related stress

A number of barriers to addressing psychosocial risks and work-related stress and potential solutions were identified through the focus group discussions. Table 6 outlines

Table 6. Barriers to addressing causes/solutions. Preliminary focus group findings

General barriers	Solutions proposed
Lack of resources & research	employers can facilitate
Authorities/employers don't act (lack of political decisions & enforcement)	networking (learn about grey literature from emerging economies)
Lack of enforcement	use experts available
Boundaries (work/non-work)	strengthen legislation
Lack of understanding of psychosocial risks	involve workers/communities
Fears of unionization (by employers)	address informal sector workers incl migrants and domestic workers
Improvements don't reach ordinary workers	interventions/tools (redefine/refine approaches)
Lack of action (we only diagnose)	consider differences within & between countries
Basic needs not addressed	multi-nationals want to save their image
Lack of skills concerning new forms of work	need for health statistics
Need for higher focus on prevention in H&S in general	respect for traditional ways of creating livelihoods

H&S — Health and Safety.

general barriers and the solutions identified, which were broad and included actions by employers, experts, policy makers, or the research community.

DISCUSSION

Limitations to this study pertain, firstly, to the samples used in this study, which were not randomised. Hence it cannot claim either representativeness or generalisability, both in terms of regional and country sub-groups (these did not contain comparable numbers of countries, and some countries had two or more participants whilst others only had one) and in terms of occupational health expertise. It is possible that perceptions and understanding would differ considerably if a different set of professionals was chosen, depending on their personal expertise and level of experience. Particularly participants stressed the lack of research data from developing countries to complement their experiences and knowledge from the scientific literature of industrialized countries.

It is, however, an exploratory attempt to reach experts in developing countries and to ask them to express their views on a large array of issues concerning occupational health and safety, and psychosocial risks and work-related stress in particular. One of the strengths of the sample for this research is its multi-disciplinarity, which may have provided less biased and broader-minded results than would have been the case from participants from the same background.

There are many definitions of work-related stress. For example, at international level, the World Health Organization defines work-related stress as a "pattern of physiological, emotional, cognitive and behavioural reactions to some extremely taxing aspects of work content, work organization and work environment" [7]. The response may be experienced when workers encounter demands and pressures at work that do not match their knowledge and abilities and which may challenge their ability to cope [20].

Results presented in Table 4 refer to work content and context, as also indicated by the well-known Job-Demand-Support model [21]. However, experts' understanding of psychosocial risks and work-related stress go beyond the traditional view of work context and content. Macro issues such as socio-economic conflict and conditions with reference to job insecurity and precarious employment were major issues discussed by the participants. Effects of globalization and the emergence of new and insecure sectors and working arrangements are felt at global level and are not restricted to industrialized countries. A recent European survey identified the ten most important emerging psychosocial risks for Europe [22] as being precarious contracts in the context of the unstable labour market, increased vulnerability of workers in the context of globalization, new forms of employment contracts and the feeling of job insecurity. This was confirmed by the PRIMA-EF European-wide survey conducted thereafter [23]. These were issues of importance for the participants and research outlines that the experience of job insecurity has been associated with poorer physical and mental health outcomes [24].

Table 5 outlines a number of health outcomes from exposure to psychosocial risks and work-related stress, including physical and psychological symptoms, as well as health behaviours detrimental to the worker, as known by the participants. Already in 1996, Cooper wrote that exposure to psychosocial risks could lead to anxiety, depression and post-traumatic stress syndrome, chronic fatigue, musculoskeletal problems, coronary heart disease, certain types of cancer and series of minor health complaints, such as psychosomatic symptoms, migraine, stomach ulcers and allergies [25]. Also workers under situations of precarious employment may face greater demands or have lower control over the work process, two factors which have been associated with higher levels of stress, higher levels of dissatisfaction, and more adverse health outcomes.

As pertains to the macro issues referred to in Table 4, self-perceived job insecurity has been found to be the single most important predictor of a number of psychological symptoms such as mild depression [26]. Work stressors have been associated with psychological disorders, such as depression and anxiety in a number of studies [27,28], and depression has been linked to occupational stress [e.g. 29,30]. In fact, 8% of depression has been

attributed globally to environmental factors, in particular occupational stress [29,33].

Generally, poverty and economic insecurity have multiple effects on exposure and vulnerability, mediated by housing, working conditions, and access to nutrition and education [32]. Downsizing, which can lead to increased job insecurity, has also been shown to be a risk to the health of employees, as a significant linear relation between the level of downsizing and long periods of sick leave, attributable to musculoskeletal disorders and trauma, has been observed [33]. Overall, research on self-reported job insecurity and workplace closure presents consistent evidence that they have significant adverse effects on self-reported physical and mental health [e.g. 34–38], as well as produce detrimental psychological and physio-pathological changes leading to poorer health outcomes [39].

These stressors may increase the risk of developing negative health-related behaviours, and research outlines that people impaired by stress engage in less health-promoting behaviours (see Table 5). A relation has been demonstrated between stress at work and smoking; the decision to stop smoking, in particular, has been shown to be negatively related to various job stressors [40,41]. Alcohol has been found to be a major contributor to the disease burden accounting for 1.5% of all deaths and 3.5% of the total disability-adjusted life years [42]. There is some evidence that temporary employment is associated with increased death from alcohol-related causes and smoking-related cancers [43,44]. This confirms an earlier study, which states that economic stress within a community may exacerbate tensions between social groups, magnify workplace stressors, and induce 'maladaptive' coping behaviours, such as smoking and alcohol use [45].

The socio-environmental context, which was stressed by participants (Table 4) includes the prevalence of HIV/AIDS, an additional burden to workers, which is a very important issue to consider in many African but also other developing countries. In this study African participants alluded to this burden particularly. A report by the World Health Organization warns about this urgent problem that impacts on caretakers' health and their wish to work abroad [46]. Participants felt there was lack of policies to address these issues.

One of the most widely studied physical health outcome is cardiovascular disease, along with its risk factors, such as hypertension, cigarette smoking, and diabetes [e.g. 47–49]. The multi-country INTERHEART study confirms that psychosocial stressors are associated with increased risk of acute myocardial infarction [50], and research also confirms the development of hypertension as a global epidemic in parallel with urbanization and industrialization, and the economic globalization [e.g. 51]. Hence, it can be concluded that the health impact from psychosocial risks and work-related stress is considerable in developing countries and should be regarded as a threat to public health.

Priorities identified

With respect to Figure 1, workplace priorities that require urgent attention encompass both traditional and psychosocial risks and work-related stress. Injuries and accident prevention is clearly one of the prevailing problems in workplace safety. The increasing transfer of industrial processes including partly obsolete machinery and inadequate social and technical infrastructure in developing countries poses a problem for tackling occupational hazards, which shows in work-related injuries and diseases. Out of 2700 million workers in the world, about two million deaths per year are due to occupational diseases and injuries and data for nonfatal injuries are not available for most of the globe, so these statistics are gross underestimates [52]. The risk for fatal accidents may thus be 10–20 times higher in the newly industrialized and developing than in the industrialized countries [3].

The next priorities listed by participants are psychosocial risks, work-related stress, and violence and harassment at work. Reasons are provided in the discussion above with respect to negative health impact, but also high absence due to illness and the ensuing costs. Statistics from industrialized countries show that the collective cost of stress is high for national economies. In the United Kingdom, stress costs the economy an estimated 5–10% of the GNP per annum [53], and it has been suggested that over 40 million working days

are lost each year due to stress-related disorders. In the United States, over half of the 550 million working days lost each year due to absenteeism are stress-related [39]. Canada reported that absence for psychological reasons increased 400% between 1993 and 1999 [54]. In many developed countries, 35–45% of absenteeism from work is due to mental health problems [55]. In the United Kingdom, for example, mental health problems are the second most important reason for absence from work, accounting for between 5 and 6 million lost working days annually [56].

Other priorities refer to infectious diseases and the problem of HIV/AIDS, substance abuse and risky behaviours, which were discussed above, as well as chemicals, noise, and biological agents, and musculo-skeletal disorders which are also the number one problem in Europe [13]. In developing countries they are, for example, to be explained by the growth of service industries which have been associated with an increase in musculoskeletal disorders from repetitive and forceful movements and stress-related diseases [11].

Priorities for action in occupational health and safety in general, are listed in Figure 2. Capacity building is an absolute priority in all developing countries. However, this is closely followed in importance by monitoring, surveillance of psychosocial risks and work-related stress. Other priorities alert to the need to improve health care, health and safety standards, the development of occupational health services and policy and legislation, as well as their enforcement. Participants also felt that a comprehensive legislatory framework that includes the informal sector, better data collection and the creation of a safety culture would be a priority.

Based on the prioritization through the Delphi surveys, the table of priorities in industrialized and developing countries developed by Rantanen et al. [5], has been adapted to these new findings and is proposed as Table 7. The table was last updated in 2004 and lists as its priorities in order for developing countries dangerous sector work (agriculture, mining, construction, forestry), transfer of hazardous technologies, accidents, chemicals, etc. For industrialized countries stress and the ageing workforce are top priorities. Below is the adapted Table of prioritization based on the recent results.

The importance ascribed to psychosocial risks, work-related stress, substance abuse and risky behaviours only

Table 7. Occupational health & safety priorities in industrialized & developing countries*. Results from Delphi surveys

Priorities in industrialized countries	Priorities in developing countries
Stress	Injury/accident prevention
Aging workforce	Monitoring and surveillance of psychosocial risks, work-related stress & violence & harassment at work; substance abuse and risky behaviours
Right to know, informed consent, transparency	Capacity building
Chemicals, particularly high production volume chemicals (HPV), & new chemicals	Infectious diseases
Ergonomics, manual handling	Musculo-skeletal disorders
Allergy	Chemicals, noise, and biological agents
Indoor air	Safety culture & health & safety standards
New technologies	Comprehensive legislatory & policy framework to include the informal sector & enforcement of health & safety
Management and safety culture	Occupational health services & improvement of healthcare, incl. primary healthcare
Occupational health services	Registration, surveillance and data collection on workers' health

* Adapted from Rantanen J. *Global estimates of fatal occupational accidents*. In: 16th International Conference of Labour Statistics, Geneva, 1998 Oct 6–15; Geneva, Switzerland. Geneva: ILO 2001; and based on 2009 Delphi study.

nine years later, shows that these issues are coming to a level of concern that requires addressing for the sake of workers' health, businesses, public health, and national economies at large.

Barriers to addressing psychosocial risks and work-related stress and solutions

Table 6 outlines a number of barriers as perceived by experts. The lack of data and statistics was mentioned in Figure 2 as one of the priorities for occupational health and safety in general. However, since psychosocial risks and work-related stress are still ill-understood and, therefore, not prioritized by the general policy makers in developing countries, extensive awareness-raising and information dissemination, as well as research will be required to address this particular barrier. Lack of policy making, enforcement, skills to address new forms of work, lack of resources, and lack of action are all linked to the former. The PRIMA-EF European-wide survey found that even in Europe psychosocial issues experienced low prioritization, particularly for employers and governments. Trade unions believe that a priori there is lack of awareness [23]. This indicates that also in industrialized countries an extensive amount of work is ahead.

Although many employers seem to fear unionization, employers can also be the solution to the problem. In particular, multinational enterprises can heighten their global reputation through action and targeted addressing of the less visible but impacting risks. They have the power to facilitate change and improvement. And as much as employers are powerful agents for change, also policy-makers are part of the solution and important actors in the awareness-raising and legislatory process. Participants clearly said that the research community should improve networking and exchange of experiences and knowledge. A number of intervention tools from industrialized contexts are available and could be redefined and refined. Stimulation of research in developing countries would improve statistics and generally available data for action by employers, worker representatives and policy-makers. This research made clear that experts knew what the barriers and the potential solutions might be. However, the actors that inherently have the power to affect change need to become the champions for this cause, and for that understand its impact and importance.

CONCLUSIONS

As much as psychosocial risks are ill-addressed in many industrialized countries, it is still important to keep the world in our view in these times of change which affects workers worldwide, but particularly in developing countries through the diverse processes of globalization and the import of new forms of work processes. The research provides some additional building blocks to the scarce existing evidence base. The aim is to get employers, policy-makers and researchers to increase their awareness and understanding of these issues in developing countries. At the same time it is hoped that they further study the potential impact of work-related stress and psychosocial risks on workers' health, delineate some priorities for action in occupational health and safety, and psychosocial risks and work-related stress in particular. This study provides some ideas how to go about this.

And lastly, it is hoped that they may be stimulated to think about an adequate research paradigm that goes beyond the workplace and takes into account a number of macro-issues that influence the context and the content of the working environment in developing countries. Close collaboration with employers and policy-makers would potentially lead to higher impact.

In summary, in the short-term, this research may provide a basis for interaction and interchange of information with researchers and practitioners from developing countries. In the last decades, the world of work has changed. It is increasingly globalized and professionals should capture the tremendous opportunities for bringing multi-disciplinary expertise to developing countries. This is especially important, if workplace risks, and in particular new and emerging risks such as those related to the psychosocial working environment, can be addressed in a timely manner in order to prevent negative impact on workers' health, businesses, and/or national economies. In the long-term, results from

this study should facilitate the proposal to include issues concerning psychosocial risks in national policies and legislatory frameworks of occupational health and safety, and the political agenda, so as to obtain comprehensive approaches to occupational health and safety.

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