

Current Comments

Diversity and equity: dealing with biological and social differences

Friedhelm Nachreiner

Carl von Ossietzky Universitaet Oldenburg. Department of Psychology. Industrial and Organizational Psychology Unit. Oldenburg, Germany

Keywords

Working conditions. Biodiversity. Occupational psychology. Human rights. Equity. Socioeconomic factors. Age factors. Sex factors. Health inequity.

Descritores

Condições de trabalho. Biodiversidade. Psicologia do trabalho. Direitos humanos. Equidade. Fatores socioeconômicos. Fatores etários. Fatores sexuais. Iniquidade na saúde.

Abstract

In the context of the design of working hours inequities in health associated with biological, psychological, social, and socioeconomic diversities can be observed. The paper first tries to set up a frame of reference for a discussion of this topic, relating to the Universal Declaration of Human Rights and some recent discussions on equity in health and then goes into some factors that produce inequities in health in the context of the design of working hours, dealing with sex or gender, age and job age, personality traits, marital status, social support, diversities in values, and socio-economic differences; the discussion deals with approaches on how to deal with these differences and inequities.

Resumo

No contexto do planejamento das horas de trabalho, observam-se iniquidades na saúde associadas à diversidade biológica, psicológica, social e socioeconômica. Inicialmente, procura-se criar uma estrutura de referência para a discussão do assunto, relacionando-o à Declaração Universal dos Direitos Humanos e a discussões recentes sobre equidade em saúde. Em seguida, passa-se a alguns fatores que causam iniquidades em saúde no contexto do planejamento das horas de trabalho, associados ao sexo ou gênero, idade e tempo de permanência no serviço, características de personalidade, estado civil, apoio social, diversidades de valores e diferenças socioeconômicas; a discussão estende-se sobre enfoques para lidar com estas diferenças e iniquidades.

INTRODUCTION

Dealing with diversity and equity in the context of working hours, safety and health first requires a short consideration of the background against which this should be discussed and what is meant by equity in this context. Health would seem to be a universal human right, and consequently it can be found as an entitlement in the Universal Declaration of Human Rights,¹³ e.g. in article 25, reading “Everyone has the

right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control”; and article 2 of this declaration states that “everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race,

Correspondence to:

Friedhelm Nachreiner
Carl von Ossietzky Universitaet Oldenburg
Institut fuer Psychologie
Arbeits- und Organisationspsychologie
D 26111 Oldenburg, Germany
E-mail: friedhelm.nachreiner@uni-oldenburg.de

Presented at the XVI International Symposium on Night and Shiftwork, November 2003. Santos, SP, Brazil.
Received on 15/3/2004. Approved on 27/9/2004.

colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status”, which would seem to set the frame of reference for the discussion of equity. In fact, providing for equity in the context of health has been defined as “minimizing avoidable disparities in health and its determinants... between groups of people who have different levels of underlying social advantage or privilege”,² with health inequities having been described as “differences in health which are not only unnecessary and avoidable but, in addition, are considered unfair and unjust”.¹⁴ This implies that the topic to be dealt with here has a distinct political dimension, and not only a purely scientific one.

The combination of these statements would thus seem appropriate for setting the frame for the discussion to follow on equity in the context of the design of work hours, i.e. avoiding any unnecessary, unfair and unjust differences in health and well being produced by an unfair or inappropriate design of work hours. Combining this with the ideas from ergonomics that work should be designed in a manner as to avoid any impairments to health and well being, this would lead to a twofold requirement: the design of working hours should not lead to any impairments in health and well being, and especially not to differential impairments depending on different levels of underlying social advantage or privilege, or biological, individual, social, societal or socioeconomic differences, which would characterize aspects or dimensions of the diversity to be taken into account in the design of working hours and the discussion to follow.

Taking these general aspects of diversity and their order from an individual to a macro-economic perspective would also indicate some of the specific aspects to be dealt with. One of the first would seem to be sex, as a relevant biological difference; – or would it be gender, since the *biological* differences would not seem to play a major part in the context of the effects of hours of work. Another relevant aspect is age, since there is a lot of discussion going on about differential effects according to age. Individual differences at a psychological level, e.g. neuroticism, morningness, etc. would seem to play an important role, following some recent reviews of the relevant literature.^{4,8,10} Based on these reviews characteristics of the social situation, like marital status and social integration, are other candidates for differential and unfair effects of the design of working hours. Extending the perspective to a societal level would make differences in cultures, e.g. with respect to shift work or the availability of services around the clock interesting candidates for a discussion, leading automatically to a consideration of social values and norma-

tive regulations as causes of inequities. Finally strategies of globalization and their effects on inequities will have to be considered as well, since globalization might be considered one of the reasons for a differential design of working hours with differential effects around the globe.

BIOLOGICAL DIVERSITY

Concerning biological differences the first ones to come to one's mind are of course sex differences. There are obviously obvious and well known differences, genetic, hormonal, stature, body mass, muscular strength, etc.; the question, however, is how these differences relate to inequities in the context of the effects of working hours. A closer inspection of the available literature shows that there is not much evidence about those differences and their effects on the effects of working hours. There is the obvious difference of the menstrual cycle between males and females, and thus another most relevant periodic component of behavior in females. On the other hand there is no distinct evidence that shift work leads to a disturbance of this rhythmic control of behavior. There are also differences in sexual behavior, but again the question is whether these are related to working hours or their effects. The literature does not tell much about that.

On the other hand there are some biological differences which are related to working times, i.e. pregnancy and child feeding, which have led to special regulations in the design of working hours for women in order to prevent any negative effects on such women or their children. In this case protective measures have been drawn up to prevent or reduce inequities due to these differences in connection with working hours.

Other biological differences, like body mass or true or attributed special abilities, have not been studied in relation to hours of work or their effects. On the other hand, however, there are a lot of differences between men and women which make a difference with regard to working hours, e.g. qualification, type of jobs, and working conditions. As has been shown abundantly women in general do different jobs than men, with in general less favorable working conditions, which cannot be related to the biological differences. Women are still today usually and in general less (formally) qualified, perhaps still based on the prejudice that they will marry, have children and keep the house, so it does not pay to qualify them. This leads to poorer jobs with poorer working and career conditions and differing working times. One remarkable observation is that – at least in industrialized countries – part time work is a dominant domain

for women.⁵ Based on a European survey it could be shown that for the Netherlands the proportion of the work force working part time (less than 30h) is about 60% for women, whereas only 10% of the male population works part time. Also in shift work women are underrepresented; there are more men working shifts than women. But this is only true in the EU for older workers, whereas in the youngest group (15-24) there were no differences. This might thus be an effect of child care, but it might also reflect other reasons. Although all this might seem to be an advantage for women, the question is whether this, e.g. higher part time engagement, is self selected or a forced choice. Looking at differences in flexible working hours⁶ enhances the suspicion that this is forced, but not free choice, since women are much more represented in unfavorable time arrangements.

A lot of this has to do with the second job women usually hold: taking care of the children and the house. This definitely increases the number of working hours and decreases the number of leisure or free time hours for women as compared to those of men, resulting in an inequity in workload, and most probably their effects. The additional burden of women – with the amount of this additional burden depending, among others, on marital and social status, education and type of job, resulting in a different amount and proportion of paid and unpaid work – is a well known fact, however its effects on health and well being are much less understood. It should also be mentioned that there are differences in social support between men and women.¹ Whereas men usually are able to cope with the stress imposed by shift work only with the support of their wives or families, husbands and children increase the burden imposed by shift work for women, again an inequity in workload and most probably its effects. Although in the study by Beermann & Nachreiner¹ women did not complain more than men about health impairments, it became clear from a closer analysis that women developed shift specific symptoms earlier than men.¹¹ Here the inequities are thus not obvious but rather hidden inequities, which might become obvious, however, if they persist for longer times than those observed in the present studies, indicating a need for longitudinal studies over a longer time period.

How should we deal with such inequities? There are usually two strategies available: (1) selection and (2) modification, with modification differentiated into modification of people or modification of conditions, which can again be differentiated according to the level where modification takes place, i.e. from the shop floor to an international level. Selection on the other hand can be differentiated into positive selection, i.e. se-

lecting only those for shift work who are shift work tolerant, vs. negative selection, i.e. selecting out those who bear the risk of not tolerating shift work and not admitting them to shift work. Positive selection, however, has been argued not to be effective or promising since no characteristics have shown sufficient predictive power and nothing is known about the base rate and the selection ratio, whereas for some characteristics negative selection seems appropriate.¹⁰ Selection in the case of sex differences, e.g. no shift work for women, clearly is not an appropriate solution – since it leads to other inequities. However, no shift work during certain periods, e.g. pregnancy and child feeding, is such a – temporary and socially acceptable – selection approach where women are restricted from night and shift work to avoid potential inequities due to biological diversity.

So modification would seem a more appropriate approach, especially since most of the inequities are not due to biological but to social differences, i.e. gender role instead of sex differences, and thus a differential design of working hours for men and women would seem a more effective approach, e.g. shorter hours for women, especially if they have to take care of a family and a house, but with equal pay, thus acknowledging their usual second job. However, this would again seem to produce inequities, since employers would then most probably refrain from employing women. So another change would seem to be more appropriate: changing the roles of men and women and getting men to take over a fair share of domestic duties and to offer social support for women working unfavorable hours. It is quite obvious that this is a rather long term endeavor, but it would seem worth while to start immediately to avoid some of the inequities imposed by gender roles.

A similar position on selection vs. modification can be taken with regard to age. There is a lot of evidence concerning age related or moderated effects of working hours.⁷ A first important question, however, would be whether increased intolerance towards shift work is a matter of (biological) age or a matter of job age, e.g. wear and tear with years on shift. Since both are obviously correlated, a clear distinction is necessary in order to provide for adequate problem oriented solutions. Preventing people from getting older is neither possible or desirable, but if the effects are due to wear and tear rather than to chronological age appropriate measures, e.g. modification of working conditions to avoid any wear and tear, would be required right from the beginning of working life instead of offering the aged and worn out a reduction of working hours to ameliorate the impairing effects. It is thus of the utmost importance to separate the effects of age and exposure to

adverse working conditions, like shift work, in order to be able to provide effective approaches for avoiding inequities. However, a lot more research on this problem needs to be done, changing to process oriented research and avoiding the common confounding in cross sectional studies, which of course are easier and faster to perform – and to publish.

Until then a modification strategy has to be taken, since selecting only those in their best ages would seem to provide additional inequities. So this would call for a differential, age related design of working hours, taking e.g. workload in relation to age related changes in capacity into account, as well as age related changes in performance, social activities, dependencies and demand for money, some of which are not directly age related but related to a change in one's social situation, which in turn is related to age or phases of individual development.

Concerning strategies to prevent effects of wear and tear with time (and thus with increasing age) a sound strategy is for a design of working conditions according ergonomic criteria, i.e. providing for workload which avoids the risk of any impairing effects. And a traditional approach in this respect is to reduce not only the intensity of workload to an acceptable level but also the time of exposure to the workload, since intensity and temporal extension tend to combine in a multiplicative function. So limiting the hours of work to a level where no impairments can be observed seems a proven and promising approach. Avoiding inequities due to age thus requires taking work load and especially a person's work load history into account, e.g. by *job age*, which might be much more relevant than *biological age*, and then, in the end, taking biological age into account, because jobs in general should be laid out in a way that age should not matter, e.g. by respecting aging processes right from the beginning in the design of jobs and working conditions in a prospective instead of a corrective manner.

What about racial diversity in the context of hours of work and their effects? There seem to be no conclusive results available. The question is, however, what we could do if there were any indication of racial differentiation in the effects of working hours, using a – most probably unfair – selection or a modification approach to avoid any inequities. It seems that one of the first questions to be asked again would have to be, whether it is really the (biological) racial differences that are leading to inequities, or whether the undeniable racial inequities are based on racial discrimination. In this case the strategy to deal with these inequities seems to be very clear: avoid any racial discrimination.

INDIVIDUAL DIFFERENCES

With other individual differences, e.g. personality traits like neuroticism, morningness, etc. the question is how much of the variance in the effects variables is determined by this kind of diversity. As has been shown before,¹⁰ no predictive relation for these variables with effect measures has been demonstrated which would justify any selection. As with age, more longitudinal research is needed here before any conclusions can be drawn. For the time being positive selection does not seem promising, however, negative selection might work in some instances, e.g. advising extreme neurotic introverts to keep away from shift work because they might become more unhappy with it; but the most promising approach with regard to individual differences would seem to be to change some dysfunctional behavioral habits/ preferences which seem to increase the desynchronization induced by shift work.¹⁰

SOCIAL DIVERSITY

As has been mentioned before, there are inequities due to social situation, e.g. marital status. Living alone vs. living with a partner with or without children makes a big difference, depending on the gender of the shift worker, calling for a modification in role behaviors and support. Social support from spouses, friends, colleagues and supervisors and social integration with relatives and friends alleviate the burden of shift work; the question, however is, how we can deal with this diversity to avoid inequities. Selecting married men and unmarried women does not seem to be promising (nor fair!). Can these inequities be compensated by adequate, differential design of working hours, which again might cause inequities, or would a change of conditions appear more promising? It would seem that much more research is needed here, e.g. in the form of intervention studies.

Another point to consider is whether shift work is embedded in a shift work culture, i.e. shift work and shift workers are something 'normal' and where provisions are made for coping with shift work, or whether shift work is something strange with which the shift worker has to cope completely by her/himself. Social life follows a social rhythm, resulting e.g. in an evening and weekend society, especially in rural areas as opposed to metropolitan areas where social activities (can) take place over extended periods of time, offering social activities also to those with abnormal working hours. But would a change to a 7x24h society be a suitable approach to avoid the inequities produced by non-normal working hours? Most probably not, because destroying social rhythms must be detrimental to social interaction. Social rhythms have a nor-

mative function, setting up a normative time structure for reliable social interaction, avoiding additional organizational requirements and individual efforts for coordinating social life, as can be seen in shift work. Hours of work do also have such a function, thus structuring behavior, at work but also off work. Instead of extending services around the clock the question should therefore rather be whether it is really necessary to have everything available at every time – given the inequities produced by shift as opposed to ‘normal’ working hours, thus increasing the proportion of those working abnormal working hours and living desynchronized with the rest of one’s social environment– or in the end with no rhythm at all. Is this really something a society should strive for?

DIVERSITY IN VALUES

Asking this question means dealing with values, or diversity in values. Again it is obvious that societies/countries have some diversity in values, e.g. concerning safety and health, and thus different policies with regard to health and safety can be observed in different countries, resulting in inequities in the health and safety of workers. And there is a process of social change going on in which some of these values become more and others less important in a society, e.g. a change from safety, health and freedom of impairments as an ethical obligation to a conception where health and safety programs are considered useful to preserve, extend or improve the workability of the workforce, thus becoming an economic requirement.

This opens the perspective on economic values, with a rivalry between health and safety and economics, with an increasing dominance on economics. This is leading to claims for extending working hours, per day, week, year or work life, since from an economic perspective it seems to be taken for granted that when workers work longer they work more, which of course is not at all in agreement with ergonomic evidence, because humans do not work like machines, it is simply not that simple! Health and safety under such a perspective becomes a means for improved economics, with the consequence that we should stop when it does not pay anymore or there is no (more) return on investments. Other consequences of such a value structure are that (false) self-employment is increasing, in order to circumvent preventive health and safety legislation (e.g. for truck drivers or people in the mass media who work unbelievable hours) or to avoid the costs of health and safety programs, promoting self-exploitation, as can be seen from working hours of self employed truck drivers.

Different countries differ in such values, resulting

in a lot of diversity in health and safety regulations, but also in health and safety practices and in the design/ regulation/ realization of working time arrangements, even in countries with a common legislation, like the European Union, where enormous differences can be observed in working hours, e.g. in the prevalence of shift work, part time work, or flexible work hours, and also with regard to autonomy in controlling one’s own working hours.⁵

Another common observation related to changes in values and economics is an increase in precarious employment, with an increase in flexibility or variability of working hours, uncontrolled and uncontrollable working hours (e.g. through combinations of two or more jobs) with unknown but most probably predictable effects for those working under such conditions, but increased flexibility and reduced costs for business management, resulting from reduced labor costs, surcharges or bonus payments. The question, however, is what the gross economic costs of such a strategy at the national level are, resulting from adverse effects on health and safety, with the associated costs being transferred to society or the national economy.

SOCIOECONOMIC DIVERSITY

But such a strict cost oriented direction is necessary for reasons of economic competition, as we can hear from managers and governments, at least in the industrialized countries, for competition between developed countries, for competition between developing countries, and for competition between developed and developing countries, in an era of globalization, with global markets, global competition and global players, where global strategies for increasing production efficiency are required. One of these rather simple strategies is to go to developing countries if labor costs are lower there (possibly due to lower social and health and safety standards), exporting precarious work, health and safety risks, exploitation and self exploitation, as can be seen e.g. in the ‘maquiladoras’ south of the border of the USA with Mexico.

By this, however, we are at the same time creating new economic pressures for the developed countries (which can be used to require a reduction in social standards in order to become competitive by removing economic “inequities”), re-importing precarious employment and reduced health and safety standards.⁷

An up to date report on a number of aspects of this problem of globalization induced effects can be found in the report of the ILO World Commission on the Social Dimension of Globalization,¹⁵ dealing with

the effects of globalization on developing, especially in the Asian and Latin American region, and developed countries, and also with problems of migration, again as an effect of inequities due to globalization.

In order to deal with these kinds of diversity and inequity changes at a macro level, action will be required by developing international health and safety regulations, e.g. at the ILO level, and making them mandatory, developing international ergonomic standards, e.g. at the ISO, and referencing them when building production sites in developing countries in order to avoid social dumping, or by installing a global health and safety reporting system.^{2,7,9,12} This could give us an indication about what the conditions in different coun-

tries really are like and what their effects are, e.g. with regard to the number of working hours and their effects on health and safety.

It seems that we do not only need global strategies for increasing production efficiency but also for protecting and improving equity in health and safety (for some proposals see e.g.¹⁵). As Chomsky³ has pointed out in his book "Profit over people. Neoliberalism and global order" we would have to try to get democratic control over financial flows, financial speculation, and over neoliberal principles in a world wide economy, so that perhaps one day in the future one can reverse the title of Chomsky's book to "People over profit".

REFERENCES

1. Beermann B, Nachreiner F. Working shifts – different effects for women and men? *Work Stress* 1995;9:289-97.
2. Braveman P. Monitoring equity in health: a policy-oriented approach in low- and middle-income countries. Geneva: World Health Organization. Division of Analysis, Research, and Assessment; 2000. Available from: URL: <http://www.hst.org.za/hlink/wrkshp/background.htm>
3. Chomsky N. Profit over people: neoliberalism and global order. New York: Seven Stories Press; 1999.
4. Costa G. Effects on health and wellbeing. In: Colquhoun P, Costa G, Folkard S, Knauth P, editors. Shiftwork: problems and solutions. Frankfurt: Peter Lang; 1996. p. 113-39.
5. Costa G, Akerstedt T, Nachreiner F, Frings-Dresen F, Folkard S, Gadbois C et al. As time goes by – flexible work hours, health and well-being. Final report for SALTSA [CD-ROM]. Stockholm: National Institute for Working Life; 2003. (Working Life Research in Europe, 8).
6. Demerouti E, Kattenbach R, Nachreiner F. Flexible working times: consequences on employees' burnout, work – non-work conflict and performance. *Shiftwork Int Newsl* 2003;20:61.
7. Fischer F M. Shiftworkers in developing countries: health and well-being and supportive measures. *J Hum Ergol* 2001;30:155-60.
8. Härmä M. Individual differences in tolerance to shiftwork: a review. *Ergonomics* 1993;36:101-10.
9. HDP Health Equity Interprogrammatic Group (PAHOWHO). Principles and basic concepts of equity and health. 1999. Available from: URL: <http://www.hst.org.za/hlink/wrkshp/background.htm>
10. Nachreiner F. Individual and social determinants of shiftwork tolerance. *Scand J Work Environ Health* 1998;24(Suppl 3):35-42.
11. Nachreiner F, Lübeck-Plöger H, Grzech-Sukalo H. Changes in the structure of health complaints as related to shiftwork exposure. *Work Stress* 1995;9:227-34.
12. Ong CN, Kogi K. Shiftwork in developing countries: current issues and trends. In: Scott AJ, editor. Shiftwork. Philadelphia: Hanley-Belfus; 1990. (Occupational Medicine State of the Art Reviews, v. 5, n. 2). p. 417-28.
13. United Nations. Universal declaration of human rights. Washington (DC); 1948. Available from: URL: <http://www.un.org/rights/50/decla.htm>
14. Whitehead M. The concepts and principles of equity and health. *Int J Health Serv* 1992;22:429-45.
15. World Commission on the Social Dimension of Globalization. A fair globalization: creating opportunities for all. Geneva: ILO; 2004. Available from: URL: <http://www.ilo.org/public/english/wcsdgd/docs/report.pdf>