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A new theory-based social classification in Japan and its validation using historically collected information

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ABSTRACT

Studies of health inequalities in Japan have increased since the millennium. However, there remains a lack of an accepted theory-based classification to measure occupation-related social position for Japan. This study attempts to derive such a classification based on the National Statistics Socio-economic Classification in the UK. Using routinely collected data from the nationally representative Comprehensive Survey of the Living Conditions of People on Health and Welfare, the Japanese Socioeconomic Classification was derived using two variables – occupational group and employment status. Validation analyses were conducted using household income, home ownership, self-rated good or poor health, and Kessler 6 psychological distress ($n \approx 36{,}000$). After adjustment for age, marital status, and area (prefecture), one step lower social class was associated with mean 16% ($p < 0.001$) lower income, and a risk ratio of 0.93 ($p < 0.001$) for home ownership. The probability of good health showed a trend in men and women (risk ratio 0.94 and 0.93, respectively, for one step lower social class, $p < 0.001$). The trend for poor health was significant in women (odds ratio 1.12, $p < 0.001$) but not in men. Kessler 6 psychological distress showed significant trends in men (risk ratio 1.03, $p = 0.044$) and in women (1.05, $p = 0.004$). We propose the Japanese Socioeconomic Classification, derived from basic occupational and employment status information, as a meaningful, theory-based and standard classification system suitable for monitoring occupation-related health inequalities in Japan.

Introduction

The number of publications on health inequalities in Japan has been growing since the millennium. However, due to a lack of accepted theory-based classification to measure occupation-related social position, interpretation and comparability between studies of health inequalities in relation to occupation have been limited. This paper addresses this gap by proposing a theory-based social classification based on the National Statistics Socio-economic Classification [NS-SEC] in the UK (Office for National Statistics, n.d.). We review existing studies in Japan and then provide a theoretical background for the construction of a theory-based social class, accompanied by validation analyses.

Background

Measures of social position used for most Japanese studies of health inequalities lack an explicit theoretical basis. We use 'social position' as a non-specific term referring to individuals' positions in social and economic structure (Bartley, 2004). Many studies have employed either a full-scale administrative classification or a collapsed shorter version (Hiraoka, 2010). The use of non-theorised classifications has undermined the validity and interpretability of the results obtained, and limits comparability between studies in Japan.

Development in methods which are in principle applicable to any industrialised society renders comparison of studies of health inequalities within and between nations considerably less problematic than in the past. Using a theory-based and validated classification, occupations can be grouped according to different dimensions of inequality: social status or social class. Social status measures are ultimately based on judgements made by survey respondents asked to rank occupations according to their prestige. This is a time consuming exercise and the prestige gradients that

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result are heavily dependent on cultural factors that will vary over time, between nations, and between communities within nations. Social class, in contrast, is allocated according to characteristics of employment conditions and relations. This approach means that coherent and uniform criteria underlie construction of social class within and across countries.

We wished to ascertain the ways in which social position has been measured in Japanese studies of health inequality up the present time. We screened 1661 publications from the last 20 years using the key words of 'Japan', 'social class', 'occupation', 'employment', or 'job' in the title or abstract in Pubmed on 6th April 2012. Three further studies were added by tracking references. By selecting studies which employed some kind of occupational classification as an exposure of interest (not as one of covariates) to study health or health-related outcomes using samples derived from more than one industry, 24 studies were retained. The type of occupational classification was understood by either the declaration in the studies or tracking references.

Of these studies, one publication used a theory-based occupational classification, the International Socio-economic Index of Occupational Status (Ganzeboom, Degraaf, Treiman, & Deleeuw, 1992), while the remaining 23 studies used the International Standard Classification of Occupation [ISCO], the Japanese Standard Classification of Occupation [JSCO], or variously collapsed versions of the JSCO since there is no standard way of collapsing the 11 categories (Table 1) (11 JSCO categories are shown in Table 2). Compared with the JSCO, the ISCO is better grounded in its construction, distinguishing skill level and type of industry, but neither classification incorporates status-related aspects of occupation or aims to measure differences in employment relations and conditions (Hoffmann, 1999). Categories in the JSCO include hybrid classes – shop owners and shop staff, for example, being in the same sales worker category (Statistics Bureau, 2009). Further, the lack of rules for collapsing the classification into shorter versions may encourage post-hoc data fitting to obtain greater inequality in outcomes, which leads to questions over the reliability of findings.

One result of grouping hybrid classes together may have been an underestimation of health inequalities in studies using community-dwelling samples. In Japan, studies using community-dwelling samples have tended to report null or inconsistent findings, regardless of the number of socio-economic categories (Fukuda, Nakamura, & Takano, 2005a, 2005b; Honjo, Tsutsumi, & Kayaba, 2010; Inoue, Kawakami, Tsuchiya, Sakurai, & Hashimoto, 2010; Kondo, Subramanian, Kawachi, Takeda, & Yamagata, 2008; Nagaya, Yoshida, Takahashi, & Kawai, 2006). This is in sharp contrast to studies using samples of local civil servants or workers belonging to a company, i.e. samples belonging to a single authoritative system, which have reported relatively clearer health inequalities according to occupational grade in biomarkers, health behaviours, chronic health conditions, and self-rated health (not included in Table 1) (see, for example, Ishizaki, Martikainen, Nakagawa, & Marmot, 2000; Martikainen, Ishizaki, Marmot, Nakagawa, & Kagamirnori, 2001; Martikainen et al., 2004; Nishi, Makino, Fukuda, & Tatara, 2004; Saijo, Yoshioka, Fukui, Kawaharada, & Kishi, 2008; Sekine, Chandola, Martikainen, Marmot, & Kagamimori, 2006). This difference can be illustrated by a comparison of two studies conducted at a similar time – in 1997/98 for a civil servants' study, and 1998/2001 for national samples. In both studies, the occupational classifications used were either JSCO or close to it. The JSCO occupational groups were collapsed into 4 to 5 similarly indexed categories – 1) administrative & managerial; 2) professional; 3) clerks (including sales and service for the national samples); 4) manual; and 5) other paid job (only for the national samples). In the national samples a significant health difference in poor self-rated health was only observed between the 'other paid job' category and the 'administrative & managerial' category (OR 1.40, sex combined and adjusted for). In the civil servant study there was a gradient-wise health difference of OR 2.28 for the male manual group compared to the top category (Kondo, Subramanian, et al., 2008; Martikainen et al., 2004). One reason for this surprising inconsistency is likely to be the fact that in the single business and local-authority studies, the use of occupational classifications that do not distinguish between employers, employees and self-employed does not lead to distortions in the distinction of social class in the same way that it does in the general population. The national samples will have included a variety of jobs with different ownership status, which is a key criterion for the allocation of social class.

Social class in Japan

In order to conduct a valid study of health inequalities, it is necessary to define the dimensions of inequality and the measures used to operationalize these dimensions. Income, education, and some kind of occupation-related classification have often been used interchangeably as measures of the social position of individuals, although each has a distinct meaning and should be considered to delineate a different dimension of social inequalities (Galobardes, Shaw, Lawlor, Lynch, & Smith, 2006; Geyer, Hemstrom, Peter, & Vagero, 2006).

Table 1
Occupational classification employed in studies in Japan, and the number of collapsed categories.

Occupational classification	Identified publication	No. of collapsed categories[a]
International socio-economic index of occupational status	Hanibuchi, Nakaya, & Murata, 2012	n.a.[b]
International standard occupational classification 88	Takao, Kawakami, & Ohtsu, 2003, Kawakami, Haratani, et al., 2004, Ishizaki et al., 2006, Wada et al., 2012	3,4,8
Japanese standard occupational classification (full scale)	Kagamimori et al., 1998, Takashima et al., 1998, Kagamimori et al., 2004, Fukuda et al., 2005a, Morita, Nakagaki, Yoshii, Tsuboi, Hayashizaki, Igo, et al., 2007, Morita, Nakagaki, Yoshii, Tsuboi, Hayashizaki, Mizuno, et al., 2007, Kawaharada et al., 2007, Suzuki, Kashima, Kawachi, & Subramanian, 2012	n.a.
Japanese standard occupational classification (collapsed)	Tsutsumi, Kayaba, Tsutsumi, Igarashi, & Jichi Medical School Cohort Study Group, 2001, Takemura, Hida, Sasaki, Sugawara, & Sen, 2005, Fukuda et al., 2005b, Hirokawa, Tsutusmi, & Kayaba, 2006, Nagaya et al., 2006, Kondo, Kawachi, Subramanian, Takeda, & Yamagata, 2008, Honjo et al., 2010, Kuwahara et al., 2010, Inoue et al., 2010, Tsutsumi, Kayaba, & Ishikawa, 2011, Kondo, Subramanian, et al., 2008	2,3,4,5,6

Studies were included if the occupational classification employed was declared or speculated from other sources if not explicitly stated.
[a] The number of groups excluded other unclassifiable occupation group.
[b] n.a.: not applicable.