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ORIGINAL ARTICLE

Public awareness of poverty as a determinant of health: survey results from 23 countries

Olaf von dem Knesebeck[1] · Nico Vonneilich[1] · Tae Jun Kim[1]

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Abstract
Objectives We aim to examine (1) variations in the public awareness of poverty as a determinant of health and (2) associations of individual and macro level factors with awareness.
Methods Analyses are based on the International Social Survey Programme. Data stem from 23 countries ($N = 37{,}228$) that were assigned to six welfare states. Sociodemographic, socio-economic, and health-related factors were considered as individual level characteristics. Gross domestic product, relative poverty rate, Gini coefficient, and magnitude of health inequalities were additionally introduced as macro level factors.
Results About 47% of the respondents in all countries agreed with the statement that people suffer from severe health problems because they are poor (range 30–77%). Multilevel analyses reveal that awareness was least pronounced in Liberal, East European, and East Asian welfare regimes. Moreover, women, older adults, respondents with low education and income, as well as poor health were more likely to show awareness.
Conclusions There is a need to raise public awareness of the adverse health effects of poverty as the public opinion can be an important driver of political will on health and social issues.

Keywords Public awareness · Poverty · Social determinants of health · International Social Survey Programme

✉ Olaf von dem Knesebeck
o.knesebeck@uke.de

[1] Department of Medical Sociology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

Introduction

As the World Health Organization points out, poverty is often defined in absolute terms, but in reality, the consequences of poverty exist on a relative scale (WHO 2017a). While absolute poverty is related to the amount of money necessary to meet basic needs, relative poverty defines people as poor if they fall below prevailing standards of living in a given society (UNESCO 2017). It was repeatedly shown and it is widely known that people who live in relative poverty have high levels of illness and premature mortality, i.e. that poverty is an important social determinant of health (Kawachi et al. 2002; Marmot et al. 2008; Wikinson 1997).

"The social determinants of health (SDH) are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life" (WHO 2017b). The Commission on SDH calls for the closing of the health gap in a generation and recommends three overarching principles of action (Commission on SDH 2008): (1) improve the conditions of daily life; (2) tackle the inequitable distribution of power, money, and resources; (3) measure and understand the problem and assess the impact of action. In terms of the third principle, one important aim is to raise public awareness about the SDH (Marmot et al. 2008) as the public opinion can be an important driver of political will on health and social issues (Shankardass et al. 2012). One example is the documentary series on "Unnatural causes: Is inequality making us sick?" (California Newsreel 2008). The series aims to increase public awareness of socioeconomic inequities in health and their human and financial costs.

There are only a few studies investigating the public awareness of SDH. A study from the United States showed that 47% of the adults believed that income has a very

strong effect on health (Robert and Booske 2011). About 53% of adults from Ontario, Canada, thought that the rich are much healthier than the poor (Shankardass et al. 2012) and about 20% from three Scottish cohorts aged 25, 45, and 65 perceived money as a very important factor influencing health (Macintyre et al. 2006). Awareness about income and poverty as determinants of health seems more pronounced among older age groups, women, people with a lower socio-economic status, and people with poor health (Robert and Booske 2011). However, associations of awareness with such individual factors are inconsistent (Macintyre et al. 2006; Shankardass et al. 2012).

The above-mentioned results indicate differences in the public awareness between countries. However, respective studies from developing countries and international comparative studies are missing. It seems likely that such variations can be explained by country-specific characteristics like welfare state regimes or other macro-level socio-economic factors (e.g. poverty rate or size of the national economy). In terms of welfare states, a threefold typology that outlined Social-Democratic, Conservative, and Liberal regimes was developed by Esping-Andersen (1990). Since then, the typology was further elaborated and extended, e.g. by including Southern and Eastern European welfare regimes (Eikemo et al. 2008; Fenger 2007; Ferrera 1996; Hochmann and Skopek 2013; Zambon et al. 2006). Finally, the translation of welfare state typologies to non-European countries led to the integration of a Confucian or East Asian welfare state (Abdul Karim et al. 2009; Lee and Ku 2007). Table 1 gives an overview of the main characteristics of the Social-Democratic, Conservative, Liberal, Southern European, East European, and East Asian welfare states.

According to regime theory (Jaeger 2006), welfare arrangements not only grant social protection and welfare provision, but also produce a social reality individuals can refer to as common or appropriate. Based on this approach, it can be assumed that people from welfare states with higher to moderate social protection programs (i.e. Social-Democratic, Conservative and, in parts, South European) consider health inequalities as more problematic and deplorable, which may result in a greater awareness of poverty as a social determinant of health. Conversely, in welfare regimes with comparatively low welfare provisions and transfers (Liberal, East European, East Asian), people might perceive poverty as less influential to health, resulting in less pronounced awareness.

This provides the background for the following analyses that are essentially focused on two aims: (1) to analyze national and welfare state differences in the public awareness of poverty as a determinant of health, (2) to analyze associations of individual and macro level factors with public awareness.

Methods

Data

This study refers to the module "health and health care" from the International Social Survey Programme (ISSP). The ISSP is a continuing annual programme of cross-national collaboration on surveys covering a variety of topics important for social science research. As a cross-sectional survey with nationally representative samples, the ISSP covers a total of 32 countries and 55,081 participants. Nine countries (Bulgaria, Croatia, Lithuania, Russia, Chile, China, Philippines, South Africa, and Turkey) were omitted from the analysis, as an integration of these countries into existing welfare regimes have proven to be difficult (Fenger 2007; Zambon et al. 2006). Therefore, a sixfold welfare regime typology was considered that distinguished between Liberal (Australia, Great Britain, Israel, United States), Conservative (Belgium, France, Germany, Netherlands, Switzerland), Social-Democratic (Denmark, Finland, Norway, Sweden), South European (Italy, Portugal, Spain), East Asian (Japan, South Korea, Taiwan), and East European (Czech Republic, Poland, Slovak Republic, Slovenia) welfare regimes (see Table 1). The same 23 countries were used in another analysis of ISSP data focussing on the public beliefs about income-related health care inequalities (Knesebeck et al. 2016). Thus, data from the same participants were used in the present analysis, but on an entirely different topic.

Collection of data for the included countries was initiated in 2011 and completed in 2013. Data and documentation can be accessed through the Leibniz Institute for the Social Sciences webpage (GESIS 2017). Sample sizes ranged from 936 in Great Britain to 3319 in France. Study participants were aged 16 or older in six countries (Finland, Belgium, Italy, Japan, the Netherlands, and Great Britain), whereas, for the remaining countries, respondents were 18 or older. In terms of the selection of participants, simple or multi-stage stratified random samples were considered. In most countries (Czech Republic, Germany, Great Britain, Israel, Japan, South Korea, Poland, Portugal, Slovenia, Spain, Slovak Republic, Switzerland, Taiwan, United States), data were collected with standardized questionnaires using either face-to-face, paper and pencil interviews (PAPI) or computer-assisted personal interviews (CAPI). In other countries, participants were invited to complete postal (Australia, France, Italy, Netherlands, Sweden) or web-based questionnaires (Denmark). Three countries (Belgium, Finland, and Norway) considered mixed modes for their data collection. Country-specific response rates varied from 23% in Italy to 78.2% in the United States (GESIS 2017; Knesebeck et al. 2016; Table 2). All

Table 1 Main characteristics of welfare states (Abdul Karim et al. 2009; Eikemo and Bambra 2007; Esping-Andersen 1990; Fenger 2007; Ferrera 1996)

Social-Democratic (Denmark, Finland, Norway, Sweden)	Comparatively generous social transfers and social protection
	Promotion of social equality through redistribution and Income protection
	High decommodification programs
Conservative (Belgium, France, Germany, Netherlands, Switzerland)	Status differentiating welfare programs
	Benefits are often earnings-related
	Emphasis on the role of the family as a source of social welfare
Liberal (Australia, Great Britain, Israel, United States)	Minimal provision of welfare
	Emphasis on the role of the market
	Modest social protection levels
	Social transfers often attract strict entitlement criteria and are Reserved for the needy
South European (Italy, Portugal, Spain)	Fragmented system of welfare provision
	Partial coverage of health services
	Emphasis on the role of the family
East European (Czech Rep., Poland, Slovak Rep., Slovenia)	Limited welfare services
	Relatively low health service provision
	Accentuation of marketization
East Asian (Japan, South Korea, Taiwan)	Low investment in social welfare
	Low levels of government intervention
	Emphasis on the role of the family and voluntary sector in Providing social security
	Underdeveloped public service provision

participating countries had to comply with the legal requirements in each country and provide anonymous data along with an informed consent upon the completion of an individual's interview (see International Survey Programme ethical statement on http://www.issp.org).

Measures

Awareness of poverty as a determinant of health was assessed by the following question: "How much do you agree with the following statement? People suffer from severe health problems because they are poor" (response categories: "strongly agree", "agree", "neither agree nor disagree", "disagree", "strongly disagree"). For the analyses, the variable was dichotomized by combining the first two and the last three categories to differentiate between respondents who agree and those who do not.

Sociodemographic (gender, age), socio-economic (income, education), and health-related factors (self-rated health) were introduced into the analyses on the individual level. These individual level factors were chosen based on results of a previous study from the United States (Robert and Booske 2011) that found that awareness was more pronounced among older age groups, women, people with a lower socio-economic status, and people with poor health.

To compute the monthly net household equivalent income, respondent were given a weight of 1, whereas each additional member in the household was attributed with a weight of 0.5. By referring to the average exchange rates in the year 2011, net household equivalent income was transformed to US$ and split into country-specific tertiles. By following the International Standard Classification of Education (ISCED) (UNESCO 1997), "No formal education", "Primary school", and "Lower secondary school" were coded as low, and "Upper secondary (allowing entry to university)" as well as "Post-secondary and non-tertiary" as medium educational level. "Lower level tertiary (also technical schools)" and "Upper level tertiary" were considered as high educational level. According to self-rated health, the responses "excellent" and "very good" were combined; "good" were coded as good health, whereas "fair" and "poor" were classified as fair/poor health.

Besides the six welfare state types (see above), four macro level (country) factors were introduced that indicate the size of the national economy, the magnitude of income inequalities, the magnitude of relative poverty, and the magnitude of health inequalities: National economic performance was measured by the Gross Domestic Product (GDP, per capita in US$). Relative poverty was defined by the percentage of people who earn less than 50% of the average income in the country. Income inequalities were measured using the Gini coefficient and magnitude of health inequalities was assessed by the country-specific

Table 2 Sample characteristics of the International Social Survey Programme (ISSP) 2011; 23 countries, $N = 37{,}228$ (Knesebeck et al. 2016)

Country/welfare state	*N*	Response rate (%)	Age (mean)	Sex (female, %)	Poverty as a determinant of health (agree, %, confidence intervals)
Australia	1946	31.1	55.1	52.8	45.0, 42.8–47.3
Great Britain	936	53.9	49.7	56.7	43.7, 40.5–47.0
Israel	1220	66.7	45.8	55.8	50.8, 47.9–53.6
United States	1550	78.2	50.0	56.7	54.0, 51.5–56.5
Liberal	*5652*	*57.5*	*50.7*	*55.1*	*48.5, 47.2–49.8*
Belgium	3083	35.8	49.7	53.8	55.5, 53.7–57.3
France	3319	35.9	52.1	58.4	54.5, 52.8–56.2
Germany	1681	37.7	50.0	49.3	50.7, 48.3–53.2
Netherlands	1472	33.7	54.0	55.5	34.4, 31.9–37.0
Switzerland	1212	53.9	48.9	49.2	46.0, 43.2–48.8
Conservative	*10,767*	*39.4*	*50.9*	*54.2*	*50.5, 49.5–51.5*
Denmark	1388	56.1	46.3	50.4	33.4, 30.8–36.0
Finland	1340	53.7	46.2	55.1	49.5, 46.8–52.2
Norway	1834	48.5	48.3	53.4	32.7, 30.5–34.9
Sweden	1158	59.8	50.0	52.6	42.7, 39.7–45.7
Social-Democratic	*5720*	*54.5*	*47.7*	*52.9*	*38.9, 37.6–40.2*
Italy	1186	23.0	50.7	53.7	39.4, 36.5–42.3
Portugal	1022	58.6	51.6	58.2	54.1, 51.0–57.2
Spain	2712	67.8	49.2	51.8	39.6, 37.7–41.5
South European	*4920*	*49.8*	*50.1*	*53.6*	*42.6, 41.2–44.0*
Japan	1306	73.9	50.5	52.8	29.7, 27.2–32.3
Korea (South)	1535	61.4	46.0	55.1	65.7, 63.3–68.1
Taiwan	2199	50.1	46.8	50.6	31.0, 29.1–33.0
East Asian	*5040*	*61.8*	*47.5*	*52.6*	*41.5, 40.1–42.9*
Czech Rep.	1804	57.9	47.4	55.3	34.3, 32.1–36.6
Poland	1115	42.6	47.8	54.0	76.9, 74.4–79.4
Slovak Rep.	1128	47.1	51.9	53.6	58.3, 55.4–61.2
Slovenia	1082	64.7	48.6	54.5	63.8, 60.9–66.7
East European	*5129*	*53.1*	*48.8*	*54.5*	*55.1, 53.7–56.5*
Total	**37,228**	**51.8**	**49.5**	**53.9**	**46.8, 46.3–47.3**

likelihood (odds ratio) of poor people for reporting poor health. GDP, Gini coefficients, and poverty rates were obtained from OECD statistics (OECD 2017) and from the World Factbook (CIA 2017), whereas association between poverty and self-rated health was calculated based on the ISSP. For the analyses, these indicators were grouped into tertiles.

Analyses

Associations of individual and macro level factors with public awareness were analyzed using multilevel logistic regression procedures. First, an empty model (Model 0) was calculated to analyze the variance in the public awareness attributed to country differences. The individual and macro level factors were introduced in Model 1. Odds ratios (OR), 95%-confidence intervals (CI), significances, the intra-class correlation coefficient (ICC), based on the between-country variance, and deviance of the statistical models are shown in the tables. Following Wu et al. (2012), we use the ICC to describe the proportion of the total variance in the outcome (i.e. awareness) attributable to the variance between clusters (i.e. countries). Statistical analyses were conducted using the software R (Version 3.2.1) and RStudio (Version 0.99.447).

Results

About 47% of the respondents in all countries agree with the statement that people suffer from severe health problems because they are poor (Table 2). Agreements vary between 29.7% in Japan and 76.9% in Poland. With regard

Table 3 Multilevel models for awareness of poverty as a determinant of health [International Social Survey Programme (ISSP)] 2011

	Model 0			Model 1		
	OR	CI	*p*	OR	CI	*p*
Fixed parts						
(Intercept)	0.89	0.72–1.09	0.29	**0.36**	0.19–0.67	**<0.001**
Equivalent household income (0 = highest tertile)						
Medium				**1.10**	1.04–1.18	**0.002**
Low				**1.23**	1.15–1.31	**<0.001**
Educational status (0 = lower level tertiary or higher)						
Medium				1.01	0.95–1.08	0.220
Low				**1.11**	1.03–1.19	**0.004**
Age				**1.01**	**1.00–1.01**	**<0.001**
Sex (0 = male)				**1.06**	1.01–1.11	**0.028**
Self-rated health (0 = excellent/very good)						
Good				**1.08**	1.02–1.15	**0.008**
Fair/poor				**1.43**	1.33–1.53	**<0.001**
Welfare regimes (0 = Social-Democratic)						
Conservative				1.00	0.63–1.60	0.984
Liberal				**0.43**	**0.20–0.94**	**0.035**
South European				1.33	0.65–2.71	0.440
East European				**0.32**	**0.15–0.71**	**0.005**
East Asian				**0.27**	**0.10–0.74**	**0.011**
Poverty rate (0 ≤ 8%)						
8.0–11.1%				**1.62**	**1.02–2.57**	**0.042**
>11.1%				**2.98**	**1.12–7.93**	**0.029**
GDP (0 ≥ 41.000 US$)						
35,000–41,000 US$				1.59	0.95–2.67	0.078
< 35,000 US$				1.60	0.85–3.02	0.154
Gini coefficient (0 ≤ 0.273)						
0.273–0.334				0.87	0.51–1.51	0.632
> 0.334				1.01	0.66–1.53	0.968
Magnitude of poverty-related health inequalities (0 ≤ 1.66 ORs)						
1.66–1.90 ORs				0.93	0.61–1.41	0.724
>1.90 ORs				1.41	0.86–2.32	0.178
Random parts						
$ICC_{country}$	0.072			0.028		
Deviance	34,881			34,436		
Between-country variation	0.278			0.095		
$N_{country}$	23			23		
Observations	26,219			26,219		

Significant associations ($p < 0.05$) are bold

OR odds ratio, *CI* confidence interval, *p* significance, *ICC* intra-class correlation coefficient

to welfare states, agreement is more pronounced in East European (55.1%), Conservative (50.5%), and Liberal regimes (48.5%), than in South European (42.6%), East Asian (41.5%), and Social-Democratic regimes (38.9%).

Table 3 shows the results of the multilevel analyses. In Model 0, the empty model, the ICC of 0.072 indicates that about 7% of the variation in the awareness about poverty as a determinant of health can be explained by country differences. In Model 1, the individual and macro level variables were introduced. Respondents in the medium and low income tertiles have a significantly increased likelihood of being aware that poverty is a determinant of health, compared to people in the high-income tertile (OR 1.10, 95% CI 1.04–1.18 for medium income; OR 1.23, 95% CI 1.15–1.31 for low income). Furthermore, women, older adults, respondents with low education, and worse than very good health are more likely to agree with the statement that people suffer from severe health problems because they are poor. Compared to respondents living in the Social-Democratic regime, those in Liberal, East European, and East Asian regimes are significantly less likely to think that poverty is a determinant of health. In countries with poverty rates above 8% likelihoods of public awareness of poverty as a determinant of health are significantly increased. GDP, Gini coefficient, and magnitude of health inequalities are not significantly related to awareness. When all individual and macro level factors are introduced, the ICC is reduced to 0.028.

Discussion

In this article, national and welfare state variations in the public awareness of poverty as a determinant of health were analyzed in 23 countries based on the International Social Survey Programme (ISSP). Moreover, associations of individual and macro level factors with public awareness were examined. Findings reveal that about half of the respondents in all countries agree with the statement that people suffer from severe health problems because they are poor. The few prior studies reported similar rates of awareness (Robert and Booske 2011; Shankardass et al. 2012), but there are variations according to the measure of awareness and country (Macintyre et al. 2006). To our knowledge, this is the first comparative study on this topic, and our results show large differences between countries and welfare states.

Agreement with the awareness item varies between 30% in Japan and 77% in Poland. Descriptive analyses additionally indicate that awareness is more pronounced in Liberal, Conservative, and East European regimes than in East Asian, South European, and Social-Democratic regimes. Awareness is least pronounced in the Social-Democratic welfare state, which is characterized by a universalistic approach to social rights (van de Velde et al. 2014), a high degree of decommodification, and a redistributive and protective policy (Jaeger 2006) (see also Table 1). However, subsequent multilevel analyses show a more complex picture. In these analyses, the Social-Democratic regime was defined as the reference category. When the individual level variables (gender, age, income, education, and self-rated health) and the macro level indicators (GDP, poverty rate, Gini coefficient, and health inequalities) are controlled, differences in awareness between welfare regimes considerably change. In these analyses, respondents from East European, East Asian, and Liberal regimes significantly differ from those in the Social-Democratic regime, in that they are less likely to be aware of poverty as a determinant of health. Additional analyses (not shown in detail) indicate that the association between welfare state regimes and the public awareness is primarily influenced by the other macro level indicators.

As mentioned in the introduction, regime theory (Jaeger 2006) suggests that welfare regimes constitute a social reality that people use as a frame of reference. Our results of the multilevel analyses indicate that people from welfare states with higher to moderate social protection programs (i.e. Social-Democratic, Conservative and, in parts, South European) are more aware of health inequalities. One possible explanation is that in these welfare states, health inequalities are publicly addressed more often than in those characterized by low investments in social welfare and limited provision of social protection policies (Liberal, East European, East Asian welfare regime). Thus, welfare state differences in the public awareness of poverty as a determinant of health may reflect differences in public debates as a part of a social reality. Discrepancy between the descriptive and the multilevel results further suggests that these differences between welfare states with high and low social protection programs only become apparent when other socio-economic macro level indicators are adjusted.

Results of the multilevel analyses furthermore indicate that women, older adults, respondents with low education and low income, as well as worse than very good health are more likely to agree with the statement that people suffer from severe health problems because they are poor. Maybe the lens of experience contributes to the socioeconomic differences: Those more likely to be affected by poverty are more likely to agree that poverty is a determinant of health. This is in line with previous findings (Robert and Booske 2011). At the same time, those more likely to be affected by poverty are less involved in political participation and voting. As the opinion of politically active people and potential voters can be an important driver of political will, politicians may be less likely to forcefully act

on the SDH (Robert and Booske 2011). If those who have more influence on the political will are less aware of the health effects of poverty pressure to act may be limited. In this regard, socioeconomic differences in the awareness may in fact contribute to the persistence of health inequalities.

We acknowledge a number of limitations to our study. Although methodological standards of the ISSP are high (GESIS 2017), varying sampling procedures as well as different dates and modes of data collection (see "Methods") may limit the comparability of the data. Moreover, there are considerable variations in response rates between countries (23% in Italy, 78.2% in the United States). Rates are lower than 50% in nine of the 23 countries (Austria, Belgium, France, Germany, Netherlands, Norway, Italy, Poland, and Slovak Republic). In view of these rates, selection bias due to non-response cannot be ruled out. Furthermore, if our estimates are sensitive to response rates, their comparability for different countries would be reduced. Given the fact that response rates tend to be lower in lower socio-economic groups and in less healthy people (Cavelaars et al. 1998), one could assume non-response might lead to an underestimation of some of the associations analysed here.

Regarding the question measuring awareness of poverty as a determinant of health ("How much do you agree with the following statement? People suffer from severe health problems because they are poor."), applicability in cross-national studies has not yet been established. It has to be considered that there may be different reference levels and notions of poverty and severe health problems in different countries and cultures. Moreover, awareness was measured using only one question. One item measures were also used in previous studies, however, with differing wording. In a Canadian study, respondents were asked whether they agree to the following statement: "In Ontario, people who are rich are much healthier than those who are poor" (Shankardass et al. 2012). In a study from the United States respondents were asked to rate whether income affects people's health on a scale from 0 (no effect) to 10 (very strong effect) (Robert and Booske 2011). In a Scottish study (Macintyre et al. 2006), it was asked how important the influence of money is on people's health (ranging from 'very important' to 'not at all important'). Altogether, we have to concede that there is no validated measure of awareness of poverty as a determinant of health. In accordance with two of the previous studies (Robert and Booske 2011; Shankardass et al. 2012), the awareness variable was dichotomized to differentiate between respondents who agree and those who do not. Thus, results of the multilevel analyses to some extent are crude.

Finally, there may be other individual and macro level factors that were not considered in this study but are important to understand variations in the public awareness of poverty as a determinant of health. The latter point defines one possible next step for future research in this area. Furthermore, inclusion of other (developing) countries may be promising.

Raising public awareness about SDH is considered an important field of action to reduce health inequalities as the public opinion can be an important driver of political will on health and social issues (Marmot et al. 2008; Marmot and Allen 2014). Our analyses underline that there is a need to raise public awareness of the adverse health effects of poverty in many countries. In most of the analyzed countries, less than 50% of the people agreed with the statement that people suffer from severe health problems because they are poor. However, results of a study from the US indicate that increasing public awareness of the SDH may not uniformly increase public support for policy action (Gollust et al. 2009), highlighting the importance to develop adequate strategies and messages to raise public awareness (Niederdeppe et al. 2008). So far, it is not really clear how best to communicate with the public concerning the SDH (Robert and Booske 2011). In this regard, not only observational but also experimental studies testing the effect of messages and communication strategies are needed.

Compliance with ethical standards

Funding The authors received no external funding for this project.

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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