Is patriarchy the source of men's higher mortality?

D Stanistreet, C Bambra, A Scott-Samuel

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authors' affiliations

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Correspondence to:
Dr D Stanistreet, Division
of Public Health, University
of Liverpool, Whelan
Building, The Quadrangle,
Liverpool L69 3GB, UK;
debbi@liv.ac.uk

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Objective: To examine the relation between levels of patriarchy and male health by comparing female homicide rates with male mortality within countries.
Hypothesis: High levels of patriarchy in a society are associated with increased mortality among men.
Design: Cross sectional ecological study design.
Setting: 51 countries from four continents were represented in the data—America, Europe, Australasia, and Asia. No data were available for Africa.
Results: A multivariate stepwise linear regression model was used. Main outcome measure was age standardised male mortality rates for 51 countries for the year 1995. Age standardised female homicide rates and GDP per capita ranking were the explanatory variables in the model. Results were also adjusted for the effects of general rates of homicide. Age standardised female homicide rates and ranking of GDP were strongly correlated with age standardised male mortality rates (Pearson's $r = 0.699$ and Spearman's 0.744 respectively) and both correlations achieved significance ($p < 0.005$). Both factors were subsequently included in the stepwise regression model. Female homicide rates explained 48.8% of the variance in male mortality, and GDP a further 13.6% showing that the higher the rate of female homicide, and hence the greater the indicator of patriarchy, the higher is the rate of mortality among men.
Conclusion: These data suggest that oppression and exploitation harm the oppressors as well as those they oppress, and that men's higher mortality is a preventable social condition, which could be tackled through global social policy measures.

P atriarchy, which has been described as ''a relationship of dominance and subordinance…. sturdier than any form of segregation, and more rigorous than class stratification, more uniform, certainly more enduring''[1] and more simply as ''the systematic domination of women by men and domination of men by other men'',[2] is a key analytical concept in feminist social research. The interaction between patriarchy and women's health has been well reported.[3–6] However, the relation between patriarchy (although this term is seldom used explicitly) and male health has only recently begun to receive the same level of attention as part of an upsurge of interest in masculinity, gendered behaviour, and health.[7–12] In developed countries, men have a higher mortality rate than women at all ages[13 14] and on average they die nearly seven years earlier than women.[15] Male mortality rates are higher across a number of different causes of mortality, such as coronary heart disease, lung cancer, suicide, liver cirrhosis, and sexually transmitted diseases.[16] Increasingly, these differences are being attributed to variation in the behaviour of men and women.[7 9] This in turn has led to the suggestion that patriarchy itself, through the sex roles and patterns of behaviour to which it gives rise, may be bad for men's health and lead to their higher mortality.[15–17]

Existing studies on patriarchy and male health have tended to have a specific country focus (usually the USA),[15 16 18] and there has been no attempt at any cross national exploration of the relation between patriarchy and male mortality rates.

In the broader comparative literature certain countries are considered relatively less (for example, the Scandinavian countries) or more (for example, the UK and the USA) structured by sex than others.[19–24] The relative level of patriarchy could thus be compared between countries using exposure measures, such as female participation in gainful employment, the proportion of women in decision making positions, or the sex division of household labour,[25] or outcome measures, such as violence against women or the female homicide rate.[26] Evidence suggests overwhelmingly that the perpetrators of sexual and domestic violence are men and the victims are women (and also children).[26 27] The high proportion of female homicides carried out by men makes this a valid indicator of patriarchy, at both individual and institutional levels, and data are available for a wide range of countries. Therefore we have studied cross national variation in the relation between levels of patriarchy and male health by comparing female homicide rates with male mortality within countries. Specifically we were interested in testing the hypothesis that high levels of patriarchy in a society are associated with increased mortality among men.

METHODS

Data on age standardised all cause male mortality rates and age standardised female homicide rates were obtained from the 1996 *World Health Statistics Annual*[28] for 51 countries throughout the world (see appendix) for the year 1995 (or where this was not available, for 1994). The annual provides a detailed description of the validity and reliability of these data stating that publication is limited to those countries that report cause of death information in an appropriate format and in which death registration coverage can be estimated as reasonably good.

Countries from four continents were represented in the data—America (North and South), Europe, Australasia, and Asia. No data were available for African countries. Gross domestic product (GDP) per capita ranking for 1994 (countries ranked as high, medium, or low GDP per capita) was obtained from the *Human Development Report* 1997[29] to adjust for the independent effect of the level of socioeconomic development between countries. The countries offered a wide range in terms of economic development, GDP per capita, ranging from 1126 dollars (Tajikistan) to 29 010 dollars (USA). Age standardised male homicide rates

Table 1 Model summary showing proportion of variance in the outcome variable explained by the predictors after adjusting for covariants in the model

Model	r	r²	SE of the estimate
1*	0.699	0.488	195.84754
2†	0.790	0.624	169.63524
3‡	0.812	0.659	163.33279

*Predictors: constant, female homicide (ln). †Predictors: constant, female homicide (ln), ranking based on GDP. ‡Predictors: constant, female homicide (ln), ranking based on GDP, male homicide (ln).

were also included in the model to adjust for the effects of general rates of homicide.

Homicide data were not normally distributed and were therefore logged. Age standardised female homicide rates and GDP per capita ranking were then correlated with age standardised male mortality rates. A multivariate stepwise linear regression model was used to distinguish the independent effect of female homicide on male mortality.

RESULTS
In all countries female life expectancy exceeded that for males. The distribution of two of the variables differed significantly from normal (Kolmogorov Smirnov statistic for normality, age standardised female homicide rate, $p = 0.007$; age standardised male homicide rate, $p = 0.001$). Therefore these variables were transformed using the natural log. Each variable was then correlated with age standardised male mortality rates.

Age standardised female homicide rates and age standardised male homicide rates were found to be strongly correlated with age standardised male mortality rates (Pearson's $r = 0.699$ and 0.625 respectively) and both correlations were highly significant ($p \leqslant 0.0005$). GDP ranking was also strongly correlated with age standardised male mortality rates (Spearman's $r = 0.744$, $p \leqslant 0.0005$). All factors were then included in a stepwise regression model to assess the effect of each factor on the outcome variable (age standardised male mortality rates). The model is shown in tables 1 and 2. The regression equation for the model is:

male mortality rate = 503.281 + 0.955 × ln(female homicide rate) + 0.508 × (GDP ranking) − 0.489 × ln(male homicide rate)

Of the three factors in the model, female homicide rates had the greater influence. Female homicide rates alone, explain 48.8% of the variance in male mortality. When GDP is added to the model, a further 13.6% of the variance is explained and when male homicide is added a further 3.5% is explained (table 1). This shows that the higher the rate of female homicide, and hence the greater the level of patriarchy, the higher is the rate of mortality among men.

DISCUSSION
We have shown a substantial and significant association between nations' levels of patriarchy and men's higher

What is already known

Male mortality rates are higher across a number of different causes of mortality and these differences have been attributed to behavioural differences between men and women. This has led to the suggestion that patriarchy itself may be bad for men's health and lead to their higher mortality. However, there has been no cross national exploration of the relation between different countries' levels of patriarchy and male mortality rates.

What this study adds

We have shown a substantial and significant association between countries' levels of patriarchy and men's higher mortality. Our data thus suggest that oppression and exploitation harm the oppressors as well as those they oppress. The importance of these findings lies in the implication that men's higher mortality is a preventable social condition, which can potentially be tackled through global social policy measures.

mortality. Our data thus suggest that oppression and exploitation harm the oppressors as well as those they oppress. The same practices that represent men's capacity to oppress women and promote their interest in doing so are also systematically harming men.[30] Support for this assertion comes from disparate sources. In the USA, men's higher mortality correlates strongly with a number of patriarchy indicators.[18] In the less patriarchal setting of Israeli kibbutzim, associations have been found between more sex egalitarian social systems and reduced life expectancy differentials between the sexes—these reduced differentials resulting from increases in male life expectancy.[31] Similar findings have been shown at the level of morbidity and wellbeing.[32] The importance of these findings lies in the implication that higher male mortality is a preventable social

Table 2 Relation between age standardised female homicide rates and age standardised male mortality rates adjusted for male homicide and GDP ranking

Variable	Unadjusted β coefficient	Significance	95% CI Lower	95% CI Upper	Adjusted β coefficient	t	Significance	95% CI Lower	95% CI Upper
Constant	738.6	<0.005	673.4	805.8	503.543	7.41	<0.005	366.833	640.253
Female homicide rate (ln)	202.329	<0.005	139.7	264.1	275.354	4.638	<0.005	155.918	394.791
GDP ranking					215.784	4.837	<0.005	126.041	305.527
Male homicide rate (ln)					−101.918	−2.185	0.037	−195.739	−8.097

Dependent variable: male all cause mortality.

condition, which can potentially be tackled through global social policy measures.

In a broader social context, it has often been asserted in human rights and philosophical discourse that oppression also harms the oppressor, through the alienation that results from internalising the ''privileges'' of oppression. It can readily be envisaged that this will have health relevant psychosocial effects.

The factor used as an indicator of patriarchy, female homicide, is not optimal and other factors could have been used such as political participation, earnings, or reproductive rights.[18] However, our selection of this factor was in part determined by the availability and quality of cross national data on other indicators. In terms of availability, international sources often only provide total rather than sex specific data. In terms of quality, while data are available on some other factors, such as the percentage of women in politics or the female to male wage ratio, the quality of much of these data is questionable.[25] For example, the women in politics data exhibit high year on year variability, and the female to male wage ratio data are based only on estimates.[25] However, it is important to acknowledge that the study is limited by using only one factor as an indicator of patriarchy.

Similarly, it must be noted that patriarchy is by no means an easily definable, uncontested, or easily measurable concept. Different articulations of patriarchy exist within the feminist literature. For example, some commentators, such as Brownmiller,[33] focus on male power and control over women's sexuality; others, such as Firestone,[34] highlight the control and power that men have over women's reproductive capacity, and more materialist feminists, such as Delphy[35] or Williams,[36] argue that the family is a patriarchal mode of production in which women and men represent opposing classes. Similarly, there are debates about where patriarchal oppression is sited—at the family or individual level (private patriarchy) or at the societal level (public patriarchy).[19 24 37] We have attempted to encapsulate both sites of oppression within our indicator. However, as it is difficult to define patriarchy, it is equally difficult to adequately measure all aspects of it. Furthermore, patriarchy is a contested concept and it has been criticised on the basis that it assumes that oppression on the grounds of sex is experienced equally by all women (and men). Consequently, it is claimed that patriarchy is a somewhat limited concept as it does not take into account the role of other diverse forms of oppression, such as class or race, or indeed reflect the diversity of experienced oppression within sexes (for example, gendered men and gendered women). This has led to some commentators, such as Connell, articulating more multidimensional theories of sex and oppression. Our population level research is unable to engage with this debate, as individual level data are required for a more multidimensional analysis.[38 39]

Further research to identify other appropriate indicators of patriarchy and to explore further the association between patriarchy and poorer health among men is required. Such research should take into account the impact of level of economic development. In addition, a study using data from African nations would permit a more complete comparison. Finally, research is needed at the individual level in addition to the population level. Work is also required to develop interventions aimed at preventing the almost globally endemic patriarchal gender roles resulting from parenting and early socialisation.[40 41] This is an enormous, but in principle achievable task: the rewards will more than justify the efforts.

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Authors' affiliations
D Stanistreet, A Scott-Samuel, Division of Public Health, University of Liverpool, UK

C Bambra, Centre of Health and Public Policy, Wolfson Institute, University of Durham, UK

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APPENDIX

Data on age standardised all cause male mortality rates and age standardised female homicide rates

Country	Age standardised male mortality rate per 100000 population*	Age standardised female homicide rate per 100000 population*	Income ranking based on GDP per capita†
Israel	467.90	0.60	1.00
Sweden	521.80	0.70	1.00
Canada	549.50	1.00	1.00
Greece	555.60	0.60	2.00
Australia	564.70	1.30	1.00
Norway	583.90	0.70	1.00
France	586.30	0.70	1.00
Italy	591.70	0.50	1.00
Spain	602.80	0.50	1.00
Netherlands	605.60	0.90	1.00
UK	626.20	0.50	1.00
Austria	638.60	0.90	1.00
Cuba	640.30	3.40	2.00
Singapore	642.80	1.10	1.00
Luxembourg	644.20	0.50	1.00
Germany	657.70	0.80	1.00
US	669.40	3.80	1.00
Belgium	670.50	1.00	1.00
Costa Rica	671.00	1.30	2.00
Finland	680.40	1.90	1.00
Denmark	692.90	0.80	1.00
Chile	719.70	0.70	2.00
Ireland	724.60	0.30	2.00
Portugal	751.10	1.10	1.00
Colombia	757.50	10.70	2.00
Slovenia	787.00	1.10	2.00
Mexico	795.90	3.40	2.00
Venezuela	798.60	2.10	2.00
Bahamas	805.00	4.80	1.00
Barbados	807.10	3.10	2.00
Rep Korea	811.90	1.20	2.00
Thailand	830.50	2.30	2.00
Albania	844.30	1.50	3.00
Croatia	875.90	1.60	2.00
Czech	877.70	1.10	2.00
Trinidad	883.30	6.40	2.00
Brazil	946.50	3.30	2.00
Slovakia	947.50	1.20	2.00
Poland	963.80	1.30	2.00
Tajikistan	982.10	2.50	3.00
Afghanistan	1027.90	0.40	3.00
Azerbaijan	1033.30	1.90	3.00
Romania	1062.70	1.90	2.00
Hungary	1136.10	1.80	2.00
Lithuania	1161.90	5.70	2.00
Estonia	1297.90	4.90	2.00
Kyrgyzstan	1338.80	6.10	3.00
Rep Moldova	1396.70	6.60	2.00
Latvia	1443.00	8.40	2.00
Kazakhstan	1503.80	8.30	2.00
Russia	1560.60	11.60	2.00

*Data from 1996 *World Health Statistics Annual.*[28] †Data obtained from 1997 *Human Development Report.*[29]