Effects of social participation and physical activity on all-cause mortality among older adults in Norfolk, England: An investigation of the EPIC-Norfolk Study

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ABSTRACT

Objectives There is growing evidence of an association between social participation and improved physical and mental health among older individuals. The aims of this study were to explore the relationship between self-reported participation in groups, clubs, or organizations and all-cause mortality among older adults and examine the role of physical activity as a potential modifier of the health effects of social participation.

Study design EPIC-Norfolk is a prospective cohort study that recruited 25,639 individuals between the ages of 40 and 79 in Norfolk County, England. This study involved a retrospective analysis of 8623 participants who had returned for the third health check between 2004 and 2011.

Methods Participants were categorized into those who reported participating socially and those who did not, and were stratified by involvement in 0, 1, or 2 or more groups. Cox Proportional Hazards models were constructed to compare all-cause mortality between the groups. Stratum-specific hazard ratios were calculated by physical activity level to assess for effect modification.

Results Of the participants, 861 (9.98%) died during the follow-up period. After adjustment for confounding, social participation was associated with lower all-cause mortality (HR 0.84, 95% CI 0.73- 0.97). Involvement in 2 or more groups was associated with lower all-cause mortality (HR 0.83, 95% CI 0.70-0.97), but the association was not statistically significant for people involved in only 1 group (HR 0.86, 95% CI 0.73-1.03). Physical activity appeared to modify the effect of social participation on mortality.

Conclusions This study's findings provide evidence of an association between social participation and lower all-cause mortality for older adults. They also suggest that the effect of social participation on health is greater for people who are more physically active. Population-level interventions to facilitate social participation may contribute to improving health and wellbeing among older individuals.

KEYWORDS

Social capital; Social participation, Mortality, Ageing, England

INTRODUCTION

In *Bowling Alone: The Collapse and Revival of American Community*, Putnam suggests that forms of social capital such as participation in community groups may improve health through providing tangible assistance, reinforcing health norms, and reducing stress.[1] Critics of social capital as a topic of research point to the term's ambiguity[2] and its reliance on proxy measures for individual exposure.

Psychosocial aspects of health inequalities entered mainstream epidemiology in the 1980s, when the Whitehall II study revealed that lower social standing was a significant risk factor for poor health.[3] There is growing evidence of differences in social participation as a driver of health inequalities. A 2019 meta-review of 20 systematic reviews found good evidence in support of the concept that structural social capital, which includes social participation, predicts better mental and physical health, but also highlighted several systematic reviews that showed non-significant or negative associations between social capital and health outcomes.[4] Heterogeneity of results likely owes to differences in demographic makeup and social dynamics among study populations. A 2017 systematic review of 44 studies by Villalonga-Olives and Kawachi explored contexts in which social capital was associated with harmful health behaviours and worse mental and physical health outcomes, such as increased levels of smoking and drinking among Japanese youth with higher participation in extracurricular activities.[5]

Another factor that varies across studies is how researchers address confounding and interaction. Physical activity, for example, is well supported in the literature as protective against mortality.[6] Research also suggests that physical activity and social participation share a reciprocal relationship, positively reinforcing one another.[7] [8] [9] [10] [11] [12] [13] Adjustment for physical activity as a confounder could underestimate the effect of social participation; however, researchers should endeavour to account for the role of physical activity and its potential influence on the health effects of social participation.

The primary aim of the present study was to explore the relationship between social participation and all-cause mortality in the U.K., using longitudinal models. The secondary aim was to assess the potential role of physical activity as a modifier of the effects of social participation. Although many studies have examined associations between social participation and long-term health outcomes, few studies have researched potential interrelated effects of social participation and physical activity on mortality.

If social participation has the potential to reduce mortality and chronic disease burden, investment in neighbourhood-level resources that promote social capital could serve as an effective method of reducing health inequalities in communities. Such interventions could have an important effect on older people, who are at higher risk of social isolation or disability.

METHODS

Study population and setting

The European Prospective Investigation of Cancer (EPIC) is a 10-country cohort study designed to examine social and environmental determinants of health, with detailed methods published elsewhere.[14] This analysis focuses on the EPIC-Norfolk cohort, one of the UK sites of the study. As nearly all residents in the UK are registered with a general practitioner, general practice lists effectively serve as population registers. Between 1993 and 1997, 25,639 participants aged 40-79 were recruited via general practices to receive examinations over the follow-up period.

The present study uses data from the Third Health Check (3HC), conducted between 2006 and 2011. In the 3HC, 18,380 men and women between ages 48 and 92 were contacted of whom 8,623 (47%) were examined.[15] All participants completed a detailed self-administered health and lifestyle questionnaire and attended a local clinic for a physical examination.

EPIC-Norfolk was carried out following the principles of the Declaration of Helsinki and the Research Governance Framework for Health and Social Care. The study was approved by the Norfolk Local Research Ethics Committee (05/Q0101/191) and East Norfolk & Waveney NHS Research Governance Committee (2005EC07L). All participants gave written, informed consent.

A health examination was carried out by trained nurses following standard operating protocols. Height and weight were measured with participants dressed in light clothing and shoes removed. A stadiometer was used to measure height to the nearest 0.1 centimetre (cm), and the Tanita body composition analyser model TBF 300s (Chasmors Ltd, London) was used to measure weight to the nearest 100g.

Participants were also sent two questionnaires. The first questionnaire covered demographic, lifestyle, health and wellness factors, and the second included social factors.[16] [17] Deaths, causes, and dates through the follow-up end date of 31 March, 2016 were obtained through death certificates obtained using linkage to NHS Digital. Participants in the dataset remained anonymous.

Explanatory variables

Continuous variables included age and body mass index (BMI). Townsend deprivation index scores, measures of areas' relative material deprivation based on unemployment, non-car ownership, non-home ownership and household overcrowding, were grouped into quartiles to account for the distribution's right skew.[18] Smoking was recorded as current, former or never, and alcohol consumption was recorded as units consumed in the past week using the amount of beer, wine, spirits and fortified wine consumed to estimate units. Educational attainment was classified into less than O-level, up to and including O-Level, up to and including A-Level, university degree or postgraduate qualifications according to the highest qualification achieved. Social class was recorded as professional, manager, skilled non-manual, skilled manual, semi-skilled and non-skilled, using the Registrar General's occupation-based classification system. Participants described their physical activity as one of four levels: inactive, moderately inactive, moderately active, or active.

The dataset presented several potential measures for individual social capital. Group membership was chosen as the explanatory variable because it served as a generalizable individual-level measure of a community-level resource.[19]

Social Participation

The EPIC-Norfolk Health Questionnaire asked participants if they regularly joined in the activities of a list of organizations.[20] Social participation was classified based on self-reported responses across thirteen social activities: 1) political parties, 2) trade unions, 3) environmental groups, 4) parent-teacher associations, 5) residents' associations, 6) classes, 7) charity groups, 8) groups for elderly people, 9) youth groups, 10) women's groups, 11) social clubs, 12) sports clubs, and 13) other group or organization. A final option was available stating, "No, I don't regularly join in any of the activities of these organizations."[21] Data on social participation were dichotomised comparing participants who reported participation in at least one group and did not check the final option, to those who did not report group participation and/or selected the final option.[22] An additional variable was generated that stratified participants who participated socially into those who were involved in one group and those who were involved in two or more groups.

Physical activity was treated as a potential effect modifier between social participation and mortality. This approach was informed by the Social Ecological Model[23] [24] [25] and Barton and Grant's "health map"[26].

Statistical Analysis

Time-to-event analysis explored the effects of social participation on long-term health outcomes. Data was analysed using STATA 14 and 15 (Statacorp, Texas). Means, proportions and standard deviations were calculated.

Associations between potential confounders and explanatory variables of interest were examined using Analysis of variance and chi square tests. Associations between social participation, number of groups joined, other variables of interest, and all-cause mortality were measured via Cox Proportional Hazards regression. Potential confounders were added in stepwise fashion, and goodness of fit was determined using Likelihood Ratio Tests comparing models with and without the additional variables. Adjustment for confounding by Townsend deprivation quartile or education level did not improve the models' goodness of fit, and these variables were not included in the fully-adjusted models. Final models, which adjusted for age, gender, smoking status, and BMI, were constructed for both social participation and number of groups joined. Physical activity, gender, education level, and Townsend deprivation quartile were tested for effect modification using Cox Proportional Hazards models with interaction terms.

RESULTS

There were 8,623 participants in the sample, with women comprising 55% (n=4,762) of the study population. Over 99% of participants were of European descent.[27] Although those who attended 3HC tended to be younger and have higher socioeconomic position (SEP) compared to those who did not, the sample still represented a wide range of socioeconomic characteristics.[28] The

average follow-up period for participants was 7.3 years. Of the 8,623 participants, 861 (9.98%) died during the follow-up period. [Table 1]

Women, non-smokers, people with lower BMI, higher levels of education, those who lived in wealthier neighbourhoods and worked in non-manual occupations were more likely to participate socially. [Table 2]

[Table 3]

After adjusting for age, gender, smoking status and BMI, the hazard ratio for all-cause mortality among those who participated socially was 0.84 (95% CI: 0.73-0.97). The hazard ratio of all-cause mortality among participants who were involved in one group was 0.86 (95% CI: 0.73-1.03), and was 0.83 (95% CI: 0.70-0.97) among those who were involved in two or more groups. [Table 4]

Physical activity appeared to modify the effect of social participation on all-cause mortality. The association between social participation and lower mortality was strongest among people who reported being physically active (HR 0.66; 95% CI 0.39-1.11). The effect size decreased for people who reported being moderately active (HR 1.00; 95% CI 0.65-1.54) or moderately inactive (HR 0.84; 95% CI 0.58-1.21). Sex, education level, and Townsend deprivation index score did not modify the effect of social participation on all-cause mortality.

DISCUSSION

Main findings of this study

Our findings suggest that a relationship may exist between social participation and lower all-cause mortality. While the impacts of social participation on health are unlikely to be universal across different settings, in this cohort, participants who reported that they participated socially at baseline had lower hazard rates of mortality compared to those who did not report that they participated socially. Associations remained after adjustment for confounding factors, including age, BMI and smoking.

There was some evidence that greater quantity of social participation was associated with lower all-cause mortality: participants who reported involvement in two or more groups had a lower rate of mortality than participants who were members of only one group or no groups. This finding was inconclusive; however, as the sample size was not large enough to determine whether mortality differed between participants involved in one group and participants who were not members of any group. It is not immediately clear why participants who were members of two or more social groups exhibited lower mortality rates than participants who were members of only one group. Higher levels of social participation may improve individuals' abilities to access community resources and create more opportunities for positive health behaviours. It may increase the amount of time individuals spend outside the home and promote more active lifestyles. Equally, quantity of social participation could be a proxy for an unmeasured variable that represents an underlying difference between people who join multiple groups and people who join just one or no groups. Additional research will be needed to further examine potential relationships between quantity of social capital and health outcomes.

In this sample, associations between social participation and lower mortality were strongest among participants who were more physically active. This observation supports the notion that social participation and physical activity may mutually reinforce one another. Forms of social participation that promote physical activity may influence health to a greater degree than forms that do not motivate more active lifestyles. Future studies may investigate how forms of social participation may differ among people with different levels of physical activity.

What is already known on this topic

This study contributes to the growing body of literature on the potential long-term health effects of social capital and social participation. A systematic review of 60 studies by Uphoff et al found evidence of social capital as a buffer against negative health effects due to socioeconomic inequality.[29] A review of 14 studies by Choi et al, in contrast, reported no evidence of an association between several forms of social capital and all-cause mortality, CVD or cancer.[30] Both reviews noted a lack of high-quality studies, however.

Comparing weighted survey data across 39 US states, Kawachi et al. noted an association between group membership and lower all-cause and coronary heart disease mortality.[31] Controlling for demographic factors only, a 2016 study found social participation to be associated with reduced mortality risk.[32] In addition, several European studies found evidence of civic and social participation protecting against CVD risk factors.[33 34 35] Conversely, a longitudinal study on social participation and coronary heart disease found no association after adjusting for physical activity and self-rated health.[36]

Several studies have examined the relationships between quantity of group membership and positive health behaviours[37] and outcomes. A 2016 matched cohort study by Steffens et. Al found that, among older individuals in England, those who remained active in two or more social groups after retirement had lower risk of death over the next 6 years compared to those who were active in one or no groups after retirement.[38] Other studies have found associations between multiple community groups membership and subjective well-being, as well as improved mental health.[39 40 41]

In a 2012 study, Kanamori et al. compared the incidence of functional disability among four groups from a cohort of older people in Japan: active participants in sports clubs, passive participants in sports clubs, people who exercise alone, and sedentary individuals.[42] The authors found that, while active participants had the lowest incidence of disability, there was no significant difference in incidence of disability between passive participants and people who exercised alone after adjusting for confounders. Such findings suggest that involvement in a sports club is beneficial for one's health not only because it promotes physical activity but also because it facilitates social participation.

Future studies may help determine whether a causal relationship exists between social participation and long-term health outcomes. Kawachi and other epidemiologists theorize that forms of social capital like social participation influence health through three pathways: 1) "social contagion", the spread of norms and health behaviours; 2) "informal social control", the ability of a community to maintain order and sanction deviant behaviour; and 3) "collective efficacy", a group's mobilizing potential for taking collective action.[43] The first pathway may help explain how participants in the EPIC-Norfolk benefited from social participation: regular contact with peers through social groups may promote positive health behaviours such as physical activity and decrease social isolation.

What this study adds

The present study had the advantage of analysing a large prospective cohort followed for over a decade, as well as obtaining data on numerous exposure measures. The longitudinal design reduced bias from reverse causality. The large sample size in this study reduced the likelihood that results were due to random error.

Although many studies on social capital and health have adjusted for physical activity as a confounder or did not include physical activity in the analysis, few studies have explored the potential interaction between social capital and physical activity. Our findings suggest that physical activity may modify the effect of social participation on health outcomes, though further statistical analysis such as employing causal inference models would provide stronger support for a reciprocal relationship between physical activity and social participation.

This study also adds to the emerging literature on multiple group membership and health outcomes among older individuals, supporting the findings of other studies that have shown associations between involvement in multiple social groups and lower mortality.

Our findings support the concept that social opportunities are important for older individuals' health and well-being. The U.K.'s National Health Service (NHS) has developed guidelines for "social prescribing", where patients with multiple morbidities are referred to local community groups and agencies for practical assistance and emotional support.[44]

As community-level resources are important ingredients for social participation, interventions to increase and improve access to it may benefit from a population-level approach. Local authorities may consider expanding infrastructure that facilitates community members' access to existing social groups, clubs, and organisations, such as subsidized or free transportation or meeting spaces.

Limitations of this study

This study was limited in its assessment of the impact of physical activity on health outcomes both independently and as a potential modifier of the effects of social participation. As social participation and physical activity were measured at the same time in this cohort, it was not possible to empirically evaluate whether a causal relationship existed between these two variables.

Another limitation of this study was the lack of stratification between individuals who participated in exercise-related social groups, such as sports clubs, and those who only participated in non-exercise groups. As participants were randomly recruited from general practices, only individuals who were healthy or cognitively capable enough were likely to attend baseline and follow-up examinations, leading to potential healthy volunteer bias.[45] Loss to follow-up over the different stages of EPIC-Norfolk was an additional limitation. If participants who had poorer health and/or demonstrated lower social participation were more likely to drop out of the study, their absence in the analysis could lead to an underestimation of effect; however, all participants were flagged for mortality using national databases. Similar trends in missing values for the variables smoking status, physical activity and self-rated health may have impacted the observed relationships between smoking, social capital and health behaviours. Recall bias may also have occurred when

participants were asked to complete mailed questionnaires, particularly when reporting past behaviours, experiences or emotions.

Furthermore, the choice of group membership as the explanatory variable of interest had some potential for bias. The question of whether participants regularly joined social group activities was open to interpretation: “regularly” could mean once a year for some participants, and once a week for others. The dataset did not contain a variable for frequency of social participation, so group membership was used as an imperfect alternative to capture participants’ quantity of social participation.

Residual confounding may also impact the observed effects of social participation on health. As participants recruited were middle aged at baseline, the study did not obtain data on many early-life experiences that affect both individuals’ social capital and their health outcomes, such as adverse childhood experiences or childhood illnesses. Similarly, the study did not obtain data on disabilities or functional limitations, which are more prevalent in older populations and may limit individuals’ opportunities for social participation. As we did not incorporate these variables in the analysis, the effect size may be overestimated.

CONCLUSION

In summary, this epidemiological study on the effects of social participation on all-cause mortality is encapsulated within a large, ongoing cohort study of a mostly white British population. Those who participated in a social group, club, or organization were more likely to be women, more highly educated and in non-manual professions. This study provides evidence in support of an association between social participation and reduced all-cause mortality, and suggests that membership in two or more groups may demonstrate an even stronger relationship with lower mortality. Associations between social participation and lower mortality were strongest among people who were physically active.

AUTHOR STATEMENTS

Ethical approval

Ethical approval was not required for this study as no new data were collected

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Competing interests

The authors declare that they have no conflict of interest.

Table Titles

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1. EPIC-Norfolk Cohort sample baseline characteristics at the 3rd Health Check (n=8623)

Variable	Level	(n=8623)	
		Mean	(SD)
Age (years)		68.7	(8,1)
Body mass index (kg/m^2)		26.8	(4.3)
		%	(n)
Sex			
	Female	55.2	4762
	Male	44.8	3861
Smoking status			
	Current	4.4	372
	Former	46.0	3909
	Never	49.6	4220
Townsend deprivation quartile			
	1 (least deprived)	25.2	2163
	2	24.2	2083
	3	25.6	2202
	4 (most deprived)	25.0	2153
Social class			
	Professional	8.8	750
	Manager	41.1	3511
	Skilled non-manual	16.1	1376
	Skilled manual	20.5	1753
	Semi-skilled	11.2	954
	Non-skilled	2.3	199
Education level			
	None/Primary only	26.3	2269
	O-level	11.9	1026
	A-level	44.2	3810
	Degree	17.6	1516
Participates in social groups?			
	No	37.7	3254
	Yes	62.3	5369
Number of groups joined			
	0	37.7	3254
	1	26.0	2244
	2 or more	36.2	3125
Self-rated health			
	Excellent	7.6	638
	Very good	35.1	2959
	Good	41.4	3493
	Fair	14.3	1209
	Poor	1.7	139
Physical activity			
	Inactive	37.3	3170
	Moderately inactive	29.0	2467
	Moderately active	17.8	1509
	Active	15.9	1355
Alive or deceased at end of follow-up period	Alive	90.0	7762
	Deceased	10.0	861

2. Comparison of sociodemographic characteristics of EPIC-Norfolk participants based on social participation status and number of groups joined

	Social Participation Measure							
	Social Participation			Number of Groups				
	No	**Yes**		**0**	**1**	**2+**	
N=8623	(n=3254)	(n=5369)	p-value	(n=3254)	(n=2244)	(n=2473)	p-value
	mean (SD)	mean (SD)		mean (SD)	mean (SD)	mean (SD)	
Age	68.5 (8.3)	68.8 (8.0)	0.10	68.5 (8.3)	68.2 (8.1)	69.3 (7.8)	<0.01
Body Mass Index (kg/m^2)	27.1 (4.4)	26.7 (4.3)	<0.01	27.1 (4.4)	26.7 (4.3)	26.7 (4.3)	<0.01
	% (n)	% (n)		% (n)	% (n)		
Smoking Status			<0.01				<0.01
Current	55.7 (207)	44.3 (165)		55.7 (207)	23.9 (89)	20.4 (76)	
Former	39.5 (1544)	60.5 (2365)		39.5 (1544)	26.8 (1047)	33.7 (1318)	
Never	32.7 (1381)	67.3 (2839)		32.7 (1381)	26.3 (1108)	41.0 (1731)	
Townsend Deprivation Quartile			<0.01				<0.01
1 (least deprived)	35.1 (759)	64.9 (1404)		35.1 (759)	28.2 (610)	36.7 (794)	
2	36.1 (751)	64.0 (1332)		36.1 (751)	26.9 (560)	37.1 (772)	
3	40.0 (880)	60.0 (1322)		40.0 (880)	24.7 (626)	35.3 (778)	
4 (most deprived)	40.0 (859)	60.0 (1294)		40.0 (859)	24.3 (168)	35.8 (770)	
Education level			<0.01				<0.01
None/Primary only	51.3 (1165)	48.7 (1104)		51.3 (1165)	26.3 (597)	22.3 (507)	
O-levels	38.2 (392)	61.8 (634)		38.2 (392)	29.1 (299)	32.7 (335)	
A-levels	35.4 (1350)	64.6 (2460)		35.4 (1350)	26.4 (1004)	38.2 (1456)	
Degree	22.8 (345)	77.2 (1171)		22.8 (345)	22.7 (344)	54.6 (827)	
Gender			<0.01				<0.01
Men	42.6 (1643)	57.5 (2218)		42.6 (1643)	28.0 (1080)	29.5 (1138)	
Women	33.8 (1611)	66.2 (3151)		33.8 (1611)	24.4 (1164)	41.7 (1987)	
Physical Activity			<0.01				<0.01
Inactive	48.2 (1529)	51.8 (1641)		48.2 (1529)	24.9 (789)	26.9 (852)	
Moderately inactive	30.6 (756)	69.4 (1711)		30.6 (756)	25.3 (625)	44.0 (1086)	
Moderately active	30.6 (462)	69.4 (1047)		30.6 (462)	28.2 (426)	41.2 (621)	
Active	28.4 (385)	71.6 (970)		28.4 (385)	29.8 (404)	41.8 (566)	

3. Results from univariable analysis exploring the associations between explanatory variables and all-cause mortality

N=8623

	Hazard Ratio	(SE)	P-value	95% CI
Age	1.13	(0.005)	<0.01	1.12-1.14
Body Mass Index (kg/m^2)	1.01	(0.008)	0.06	1.00-1.03
Smoking Status				
Current	-			
Former	1.13	(0.18)	0.43	0.83-1.56
Never	0.70	(0.12)	0.03	0.51-0.97
Townsend Deprivation Quartile				
1 (Least deprived)	-			
2	1.01	(0.10)	0.91	0.84-1.23
3	1.05	(0.10)	0.61	0.87-1.26
4 (Most deprived)	0.92	(0.09)	0.40	0.76-1.12
Education Level				
No qualifications	-			
O-level	0.58	(0.07)	<0.01	0.45-0.75
A-level	0.76	(0.06)	<0.01	0.65-0.89
Degree	0.72	(0.07)	<0.01	0.58-0.88
Gender				
Men	-			
Women	0.57	(0.04)	<0.01	0.50-0.66
Social Class				
Professional	-			
Manager	1.29	(0.18)	0.06	0.99-1.70
Skilled non-manual	1.33	(0.20)	0.06	0.99-1.79
Skilled manual	1.05	(0.16)	0.73	0.78-1.42
Semi-skilled	1.04	(0.17)	0.82	0.75-1.44
Non-skilled	1.35	(0.33)	0.21	0.84-2.17
Physical Activity Status				
Inactive	-			
Moderately inactive	0.45	(0.04)	<0.001	0.38-0.54
Moderately active	0.49	(0.05)	<0.001	0.40-0.60
Active	0.43	(0.03)	<0.01	0.37-0.49
Self-Rated Health				
Good/fair/poor	-			
Excellent/very good	0.42	(0.03)	<0.01	0.35-0.49
Participates in Social Groups				
No	-			
Yes	0.79	(0.05)	< 0.01	0.69-0.91
Number of Groups Joined				
0	-			
1	0.78	(0.07)	< 0.01	0.65-0.92
2 or more	0.81	(0.06)	0.01	0.69-0.94
Participates in a sports group				
No	-			
Yes	0.55	(0.05)	< 0.01	0.45-0.66

4. Cox proportional hazards models: rates of all-cause mortality in people who participate socially in groups compared to people who do not participate socially, and further stratifying results by involvement in 1 or 2+ groups

		Age and gender adjusted			**Age, gender and area deprivation adjusted**			**Age, gender and education level adjusted**			**Age, gender, smoking status and BMI adjusted**		
	Level	HR	(95%CI)	LR	HR	(95%CI)	LR	HR	(95%CI)	LR	HR	(95%CI)	LR
Hazard ratio of all-cause mortality in people who participate socially at baseline (N=8623)		0.81	(0.71, 0.93)	0.04	0.81	(0.71, 0.93)	0.19	0.81	(0.71, 0.93)	0.93	0.84	(0.73- 0.97)	0.03
Hazard ratio of all-cause mortality in people who report participating in 1, or 2+ groups compared to people who do not participate in groups (N=8623)	1 group	0.83	(0.56, 0.98)	<0.01	0.84	(0.70-0.99)	0.19	0.83	(0.70-0.99)	0.94	0.86	(0.73-1.03)	0.03
	2 or more groups	0.80	(0.68, 0.93)		0.80	(0.68-0.93)		0.80	(0.68-0.93)		0.83	(0.70-0.97)	

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