

Explaining Unequal Levels of Social Capital in Tehran

Yahya Shadi^{1,2} · Mohammad Hassan Lotfi¹ · Saharnaz Nedjat³ ·
Mostafa Amini Rarani⁴ · Esmail Khedmati Morasae⁵

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Abstract Social capital may act as an asset to serve people in various situations. However, people do not equally enjoy the same level of social capital and there is inequality in distribution of this asset in societies. There is few research within the wider literature exploring the determinants of inequality in social capital. This study measured and decomposed inequality in the distribution of social capital in Tehran using a concentration index approach. Data was gathered through a survey in 2008, the sample included 2484 of over 18-year old residents. Social Capital Integrated Questionnaire was used to measure social capital status, its dimensions (networking, trust, and cooperation) and outcomes (cohesion and political action). Most of social capital dimensions/outcomes were unequally distributed in Tehran, favouring the rich. However, in terms of political action, the poor were more politically active than the rich in Tehran. Decomposition showed that economic status and education had the highest contributions to the observed inequalities. In efforts to move towards a more just society, these findings can inform future policies in Iran to tackle the observed inequalities in social capital.

Keywords Social capital · Dimensions · Inequalities · Tehran

✉ Esmail Khedmati Morasae
E.Khedmati-Morasae@liverpool.ac.uk; eshmel.k@gmail.com

¹ Epidemiology and Biostatistics Department, School of Public Health, Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran

² School of Public Health, Zanjan University of Medical Sciences, Zanjan, Iran

³ Epidemiology and Biostatistics Department, School of Public Health, Knowledge Utilization Research Center, Tehran University of Medical Sciences, Tehran, Iran

⁴ Health Management and Economics Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

⁵ Department of Health Services Research, Institute of Psychology, Health and Society, University of Liverpool, B210 Waterhouse Building, Brownlow Street, Liverpool L69 3GL, UK

1 Introduction

Social capital refers to social features, such as communication networks, norms, and intra-personal trust, that act as resources on which individuals rely to facilitate reciprocal and collective measures (Kawachi et al. 1997; Shortt 2004). To be more precise, social capital is a potential asset in life, showing up in the quantity and quality of social relationships, that can be mobilised to serve personal and collective needs (Bonoli and Turttschi 2015). However, there is some evidence that individuals do not gain equal enjoyment from such an asset in life, and that there is social inequality in both the quantity (e.g. the number of friends someone has) and quality of social capital that people acquire and enjoy (Baheiraei et al. 2016a, b). Nevertheless, relatively less attention in the literature has been paid to the distribution of this asset across social groups.

1.1 Theoretical Background

For the first time, Lin suggested that unequal distribution of social capital merits more attention in social sciences (Lin 2000; Verhaeghe et al. 2012; van Oorschot et al. 2006). Lin proposed two pathways that may lead to unequal distribution of social capital; socio-economic stratification of social groups based on their access to opportunities, and homophily in formation of social networks. The first pathway points to a structural process; social groups (defined by race, religion, gender, social class, or other features) occupy different social ranks in a society. As a result of historical and institutional processes, each society structurally provides unequal opportunities to the members of its social groups. The second pathway, homophily, points to a general tendency in networking, a tendency to meet, interact, and share emotions with people with similar features. Thus, people from a particular social group form networks that involve other members of that group.

These two pathways, operating hand in hand, lead to differential access to social capital for social groups members; members of a given social group, by gathering around low-level (or high-level) socioeconomic ranks and interacting with other people of similar ranks would embed themselves in social networks that are poor (or rich) in resources (information, influence, etc.) and, thus, in social capital.

1.2 Social Capital in Iran

The social capital level has been gradually declining in Iran over recent decades (Motavaseli et al. 2012), and its overall level among Iranian people is relatively low (Amini Rarani et al. 2011). In a recent study, it was shown that the social capital level among Iranian youth was below the average and the score for dimensions of associative relations and participation in institutions was low (Shiani et al. 2009). More specifically, some studies have shown that, with ever-increasing urbanisation in Iran, traditional forms of social capital (bonding type), characterised by intergroup affiliations and limited and unique social trust levels, have been gradually eroding. Meanwhile, the modern form of social capital (bridging type), characterised by intragroup liaisons and generalised and expanded trust, has not been fully shaped and established (Amini Rarani et al. 2011).

Nevertheless, there is less information about the distribution of social capital in Iran as well. More precisely, except for information about unequal distribution of social capital in terms of sociodemographic variables, we have no information about the level of that inequality and the influence of different socioeconomic and demographic factors on this inequality.

2 Literature Review

After Lin's theoretical argument about inequalities in social capital, an increasing number of studies have paid attention to social capital inequalities. In fact, social capital has been shown to be associated with individual, household, and neighbourhood level variables, and the level of social capital obtained varies in line with these variables. At the individual level, social capital has been shown to be associated and vary with age¹ (Nieminen et al. 2008), gender² (Bagheri Yazdi 2011), income³ (Ganev et al. 2004), educational status⁴ (Ganev et al. 2004), marital status⁵ (Bagheri Yazdi 2011), occupational status⁶ (Bagheri Yazdi 2011), ethnicity⁷ (Baheiraei et al. 2016a, b), race⁸ (Brehm and Rahn 1997), religion (Brehm and Rahn 1997; Helliwell and Putnam 1999), immigration status (Behtoui 2007; Völker et al. 2008; Bonoli and Turtschi 2015), and disability status (Mithen et al. 2015; Verdonschot et al. 2009).

Nieminen et al. (2008) and Ashrafi et al. (2012), for example, have reported of a strong positive relation between age and trust in Finland and Iran, respectively. Lee et al. (2008) also revealed that the elderly had greater trust when compared to their young and middle-aged counterparts in South Korea. Interestingly, Baheiraei et al. (2016a, b) found that there was no significant relationship between trust and age among women of reproductive age (15–45) in Tehran. In terms of overall social capital, Bolin et al. (2003) reported of limited social capital among the elderly. However, in contrast, van Tubergen and Volker (2015) and Baheiraei et al. (2016a, b) reported that overall social capital increased with age in the Netherlands and Tehran, respectively. For social inclusion dimension, Speer et al. (2001) reported that social inclusion significantly increased with age in the United States. In contrast, Fidrmuc and Gërkhani (2005) reported a negative relationship between age and social network dimension in central and eastern Europe. However, Cross and Lin (2008) found no inequalities across age groups in terms of network resources in the United States.

Studies from Iran (Baheiraei et al. 2016a, b; Ashrafi et al. 2012), Netherlands (Völker et al. 2008; van Tubergen and Volker 2015), Belgium (Verhaeghe et al. 2015), Switzerland (Bonoli and Turtschi 2015), England (Tholen et al. 2013), and Sweden (Behtoui 2007) have also shown that participation in networks is positively related with level of education. Higher education has also been reported to be a significant determinant of social inclusion dimension in Iran (Ashrafi et al. 2012), Finland (Nieminen et al. 2008), Greece (Kostas and Roumeliotou 2009), Europe (Halman and Luijkx 2006; Van Oorschot and Finsveen 2009), and United States (Brehm and Rahn 1997). Interestingly, there has been no such relationship between education and trust in a study from Australia (Hughes and Stone 2002). Van Oorschot et al. (2005) even reported a negative relationship between education level and trust in some European countries. For social cohesion, however, there have been some opposing reports from Iran about education's effects on social cohesion. For example,

¹ Lee et al. (2008), Ashrafi et al. (2012), Nedjat et al. (2013), Glaeser et al. (2002), Fidrmuc and Gërkhani (2005) and Bolin et al. (2003).

² van Tubergen and Volker (2015) and Bonoli and Turtschi (2015).

³ Hughes and Stone (2002), Baheiraei et al. (2016a, b), Nieminen et al. (2008) and Ashrafi et al. (2012).

⁴ Hughes and Stone (2002), Guillen et al. (2011), Kostas and Roumeliotou (2009), Halman and Luijkx (2006), Van Oorschot et al. (2005) and Van Oorschot and Finsveen (2009).

⁵ Ashrafi et al. (2012), Nakhaie and Arnold (2010), Christoforou (2005) and Nedjat et al. (2013).

⁶ Baheiraei et al. (2016a, b), Steinfield et al. (2008) and Lindström et al. (2006).

⁷ Locher et al. (2005), Spencer et al. (2009), Lindström (2009) and Nateghpoor and Firuzabadi (2003).

⁸ Helliwell and Putnam (1999) and Cross and Lin (2008).

Nateghpoor and Firuzabadi (2003) reported that education and social cohesion were positively related with each other, but Baheiraei et al. (2016a, b) reported that there was no relationship between them among women of reproductive age.

Occupational status has also been shown to be positively associated with networking abilities (Baheiraei et al. 2016a, b; Ashrafi et al. 2012). For example, Stone and Highes (2002) reported that occupation status had a significant relationship with networking in Australia. Studies from across Europe have also reported that access to social networks is higher among men and employed people (Völker et al. 2008; Bonoli and Turttschi 2015; Verhaeghe et al. 2015). Interestingly, Baheiraei et al. (2016a, b) reported that there was no relationship between employment and social cohesion in Iran.

More importantly, there is some strong international evidence supporting the relationship between better social capital and higher economic status, at both personal and societal levels (Simpson 2006; Narayan 2002; Dearmon and Grier 2009). Such a notable relationship, for example, was found between income and the trust dimension in some studies in Iran (Baheiraei et al. 2016a, b; Ashrafi et al. 2012). Similarly, Nieminen et al. (2008) reported a significant positive connection between income and trust level in Finland. Schafer and Vargas (2016) also showed that, in the United States, there is an inequality in the ability to maintain social ties for a long time, favouring individuals with higher socioeconomic status. At household level, it has been also shown that social capital is positively associated with and varies in line with household socioeconomic status (Verhaeghe et al. 2012, 2015). Similar associations and variations, disfavouring the disadvantaged, have been reported for place-level deprivation variables, such as neighbourhood (van Tubergen and Volker 2015; Small 2007) and geographical region (Hawes et al. 2013).

Nonetheless, despite the increasing number of studies about such associations and variations and some inconsistencies in findings, there has been, to the best of the authors' knowledge, no study so far to quantify the inequalities in social capital and reveal the contribution of social factors to the measured inequality. Therefore, considering Iran's status in terms of social capital and its distribution, the current study aimed to investigate how individual level social capital is unequally (socioeconomically) distributed in Tehran, Iran's capital, and then to quantify the level of the inequality. In addition, the authors aimed to unearth the contribution of different social factors to the measured inequality. From such analyses, we hoped that our study might make contributions to the current literature of social capital. First, this is the first time, to the best of our knowledge, that inequality in social capital has been measured (quantified) and decomposed. This can thus provide a role model for similar studies in other contexts so that we can compare the results and learn more about inequality determinants and their contributions, and thereby enrich the current general theories about social relations. Second, our study findings may have implications for other spheres tightly related to social capital, such as public health issues, as inequalities in social capital have been proposed as a pathway contributing to inequalities in health status (physical and mental). Third, this study can inform policy-makers of required interventions to improve social capital status and redress the inequalities in Iran.

3 Methods

The required data was gathered in a survey in Tehran, in 2008, in which residents over the age of 18 were sampled. The Social Capital Integrated Questionnaire (SC-IQ), developed by the World Bank (Grootaert et al. 2004), was used to measure social capital status at the individual level in Tehran. The questionnaire had already been validated for use in Iran's context (Nedjat et al. 2013). The SC-IQ consists of a set of questions covering three social capital dimensions of "participation in social groups and networks", "trust and solidarity", "cooperation and collective action"; and two social capital outcomes of "social cohesion and inclusion", and "empowerment and political action". Full information about the questionnaire can be found elsewhere (Nedjat et al. 2013; Grootaert et al. 2004). This study was approved by the Shahid Sadoughi University of Medical Sciences and Health Services' Ethics Committee.

Following the World Bank, the overall social capital score for each subject was calculated as the mean of the summation of scores in the three dimensions (Grootaert et al. 2004). However, the developed questionnaire and all the studies that have used it defined no cut-off point to distinguish between high and low levels of social capital. Therefore, the median was used as the cut-of-point to distinguish between people in terms of their level of social capital in Tehran (Table 1). In this way, we had a binary variable comprising of a "low level" and a "high level" of social capital. More importantly, it was the low level of social capital (weak social capital) for which we conducted the inequality measurement and decomposition. This matter was due to the coding of the variable in the software and had no ramification for the results. In fact, if the high level of social capital was chosen, only the sign of concentration indices would change (from negative to positive and vice versa), with no differences in contributions of determinants to the inequality.

To measure the economic status of households and construct economic quintiles, the Principal Component Analysis (PCA) method was used. In the absence of direct data on income and expenditure in surveys, one prevalent and broadly used approach for assessing households' economic status is to apply PCA to construct a wealth index from information on household ownership of durable assets and housing characteristics (Montgomery et al. 2000). As data gathering for direct measures is expensive, as well as being partially unfeasible and biased, particularly in developing countries, data on durable household assets was used to create a proxy measure of economic status (Vyas and Kumaranayake 2006). We applied information on households' ownership of durable goods and housing characteristics to lessen the concerns raised above. The asset variables used for PCA were as follows: constructed area per capita, vacuum cleaner, a separate kitchen, personal computer, washing machine, bathroom, freezer, dishwasher, personal car (i.e., not for money-making or work), cell-phone, colour TV, and different types of video players. Constructed area per capita was defined as the number of rooms per household member. Other assets were included into the PCA model as dichotomous variables, i.e., "have" or "do not have" a vacuum cleaner, a separate kitchen, and so on. Following McKenzie (2005), the first component of PCA was chosen as a proxy for the household economic status. The amount of variance in the economic status that was explained by the first component was 27%.

Multi-stage and probability-proportional-to-size sampling was used for selection of the individuals in the survey. At first, Tehran's 22 municipality zones were chosen as sampling strata. Then, Blocks of each zone were chosen randomly, applying weights corresponding to the number of individuals within the blocks. Within each block, a systematic sampling

Table 1 Characteristics of participants and mean of social capital for each characteristic in Tehran

Variable	Number (%)	Mean of social capital dimensions (SD)					Mean of overall social capita (SD)
		Network	Trust	Cooperation	Cohesion	Politics	
Age							
18–25	687 (27.6)	7.74 (3.28)	16.59 (2.98)	6.52 (1.99)	32.05 (4.96)	44.53 (9.3)	31.0 (5.46)
26–35	425 (17.11)	6.84 (2.74)	16.66 (3.11)	6.64 (1.95)	32.29 (5.11)	43.52 (8.96)	30.2 (5.46)
36–45	371 (14.94)	6.92 (3)	16.81 (3.12)	6.69 (1.94)	32.75 (5.42)	46.15 (9.34)	30.6 (5.57)
46–55	412 (16.59)	7.03 (3.43)	16.95 (3.09)	6.82 (1.88)	32.86 (5.54)	44.15 (9.01)	31.3 (5.65)
56–65	281 (11.31)	6.51 (3.38)	17.01 (3.34)	6.82 (2.02)	33.14 (5.53)	46.87 (8.79)	30.8 (5.73)
> 66	308 (12.40)	6.51 (3.83)	17.23 (3.37)	6.83 (2.07)	32.99 (5.93)	46.27 (9.61)	30.8 (5.72)
Family size							
1–5	2369 (95.4)	5.56 (1.54)	18.06 (2.96)	6.56 (1.28)	31.26 (5.59)	44.12 (9.03)	30.6 (5.2)
> 6	115 (4.6)	7.22 (3.16)	17.08 (2.97)	6.83 (1.86)	33.2 (5.02)	44.98 (8.91)	30.8 (5.55)
Wealth							
Poorest	495 (21.7)	5.94 (2.73)	17.06 (3.12)	6.84 (1.88)	32.22 (5.96)	47.17 (9.41)	29.53 (5.58)
Poor	545 (23.27)	7.3 (3.45)	17.03 (3.17)	6.9 (1.9)	32.85 (4.76)	45.07 (8.64)	30.69 (6.01)
Middle	348 (14.86)	7.32 (3.21)	17.36 (2.89)	7.17 (1.8)	33.02 (4.97)	45.99 (8.01)	31.27 (5.29)
Rich	729 (31.13)	7.45 (2.92)	16.94 (2.92)	6.67 (1.86)	33.21 (4.62)	43.8 (8.84)	31.07 (5.34)
Richest	225 (9.61)	7.59 (3.15)	17.5 (2.55)	6.66 (1.63)	34.66 (4.83)	42.7 (9.13)	31.51 (5.29)
Gender							
Female	1268 (51)	6.83 (2.9)	17.16 (2.82)	6.82 (3.19)	32.92 (5)	44.69 (8.77)	30.41 (5.46)
Male	1216 (49)	7.49 (3.31)	17.08 (3.09)	6.82 (3.65)	33.35 (5.08)	45.17 (9.02)	31.18 (5.63)
Occupation							
Employed	800 (32.2)	7.37 (3.08)	17.16 (3.01)	6.91 (1.88)	33.59 (5)	44.91 (9.22)	31.08 (5.69)
Unemployed	1684 (67.8)	7.05 (3.18)	17.11 (2.95)	6.78 (1.83)	32.94 (5.06)	45 (8.74)	30.64 (5.49)
Education							
Illiterate	228 (9.18)	5.85 (3.32)	17.14 (3.29)	6.97 (2.07)	33.27 (5.96)	49.85 (10.08)	30.7 (5.88)
Primary school	449 (18.08)	6.31 (3.25)	16.55 (3.45)	6.79 (1.89)	32.88 (5.76)	45.66 (9.63)	30.0 (6.21)
Secondary school	1063 (42.79)	7.08 (3.15)	16.86 (3)	6.65 (2.01)	32.34 (5.15)	44.80 (9.21)	30.8 (5.36)

Table 1 continued

Variable	Number (%)	Mean of social capital dimensions (SD)					Mean of overall social capita (SD)
		Network	Trust	Cooperation	Cohesion	Politics	
High school	616 (24.80)	7.92 (3.11)	16.86 (3.06)	6.52 (1.89)	32.59 (5.04)	43.59 (8.64)	31.5 (5.45)
Academic	128 (5.15)	5.90 (2.5)	16.70 (3.13)	6.95 (2.12)	32.06 (5.78)	44.86 (7.77)	29.7 (4.98)
Marital status							
Married	1582 (63.76)	6.73 (3.12)	16.84 (3.15)	6.78 (1.96)	32.9 (5.46)	45.34 (9.31)	30.7 (5.64)
Single	699 (28.17)	7.83 (3.18)	16.70 (3.05)	6.54 (1.96)	32.09 (4.98)	43.95 (9.03)	31.2 (5.48)
Divorced	18 (0.73)	6 (3.55)	15.38 (2.96)	6.18 (2.72)	29.83 (6.57)	41.1 (12.45)	26.5 (3.95)
Widow	182 (7.34)	6.21 (3.36)	17.33 (3.32)	6.56 (1.02)	31.98 (5.52)	46.52 (8.68)	30.6 (5.21)
Overall mean in sample	–	7.05 (3.2)	16.82 (3.13)	6.68 (1.97)	32.56 (5.35)	44.95 (9.23)	30.79 (5.56)
Median	–	7	17	7	33	45	31

was undertaken. The distance between households within each block was one-tenth of the number of households in the block, and the starting point was determined randomly. Ten households (and subsequently 10 respondents) were chosen from each block. Quota sampling was used for sex selection within the blocks, so that five males and five females were chosen from each block. The respondent in each household was randomly selected from those who were present at the interview time. 29% of households who were approached were reluctant to take part in the study. Finally, 2484 respondents were entered into the analyses (Nedjat et al. 2013).

Inequality in social capital and in its dimensions and outcomes was measured by use of a concentration index. The index is constructed through a concentration curve. The curve depicts cumulative percentage distribution of a variable (e.g. social capital) (Y axis) against cumulative percentage ranking of an economic variable (X axis), starting from the poorest household. In case of equal distribution, the curve and equality line (a 45° line) coincide and the index equals zero. If the curve lies above (or below) the equality line it denotes that the desired variable is mostly concentrated among people of lower (or higher) economic status and the index will take a negative (or positive) value. The concentration index is twice the area between the equality line and the concentration curve:

$$C = \frac{2}{n\mu} \sum_{i=1}^n y_i R_i - 1 \quad (1)$$

In which, y_i signifies the dependent variable of interest (e.g. social capital), μ represents its mean, and R_i denotes the fractional rank of each individual in terms of household economic status. The concentration index ranges from -1 to $+1$.

However, since there has been increasing criticism of using concentration index regarding its sensitivity to the mean of variable of interest, as its bounds trespass + 1 and - 1 in relatively large samples, scientists have suggested corrections to consideration index. Namely, Wagstaff has proposed that the index has to be normalised by dividing it by 1 minus the mean of the variable of interest (O'Donnell and Wagstaff 2008; Wagstaff 2005). Accordingly, in the present study we used normalised concentration index to measure and decompose the inequality in social capital. Normalised concentration index can be illustrated as follows:

$$CI_{normalized} = \frac{CI}{1 - \mu} \quad (2)$$

To reveal what variables contribute to the measured value of inequalities, a decomposition analysis was used (Wagstaff et al. 2003). Wagstaff et al. (2003) showed that, for any regression model linking the variable of interest, y , to a set of k determinants, x_k :

$$y_i = \alpha + \sum_k \beta_k x_{ki} + \varepsilon_i \quad (3)$$

where x_{ki} is a set of k independent variables for the i th individual, β_k denotes the coefficient, and ε_i is an error term.

Given the relationship between y_i and x_{ki} in Eq. (3), the concentration index for y (C) can be written as:

$$C = \sum_k \left(\frac{\beta_k \bar{x}_k}{\mu} \right) C_k + \frac{GC_e}{\mu} = C_y + \frac{GC_e}{\mu} \quad (4)$$

where μ is the mean of y , \bar{x}_k is the mean of x_k , C_k is the normalised concentration index for x_k , defined precisely like C , $\frac{\beta_k \bar{x}_k}{\mu}$ is the elasticity of the low social capital with explanatory variables, and GC_e is the residual component. The elasticity stands for the amount of variability in social capital with one unit change in each explanatory or determinant variable.

To conduct the decomposition analysis, all components of Eq. (4) were consecutively calculated as follows: (1) an appropriate regression model was run to calculate coefficients (β_k) of the explanatory variables. Taking the binary nature of social capital in the present study and following Yiengprugsawan et al. (2010), a Generalised Linear Model (GLM) (with binomial family and identity link) was used for decomposition. The vantage point of GLM to other regression models is that it leads to valid coefficient estimates that do not vary by choice of reference category (Yiengprugsawan et al. 2010). (2) The means of the social capital (μ), and each of its determinants (\bar{x}_k) were calculated. (3) The normalised concentration index was calculated for social capital (C) and for determinants (C_k). (4) The absolute contribution of each determinant to the inequality (to concentration index) was obtained ($(\frac{\beta_k \bar{x}_k}{\mu})(C_k)$). Finally, (5) the percentage contribution of each determinant to the inequality was calculated ($(\frac{\beta_k \bar{x}_k}{\mu})(C_k)/C$). In this way, the contribution of each determinant to the measured inequality in social capital was determined.

4 Results

Descriptive features of participants are illustrated in Table 1. As the table shows, 51% of participants were female, and 66% had non-academic education. According to the findings, the mean of the overall social capital was higher among men. The mean was low among the poorest quintile, people with academic education level, and divorced people. Detailed information about descriptive features of social capital can be found in another article (Nedjat et al. 2013).

Figure 1 illustrates concentration curves for overall social capital and its dimensions/outcomes, for which there was a significant inequality in their distribution. To be exact, there was significant inequality in distribution of all dimensions/outcomes of social capital except for the cooperation dimension. The levels of inequality (normalised concentration index) for those curves were as follows: cohesion (WCI = 0.116, 95% CI = 0.092 to

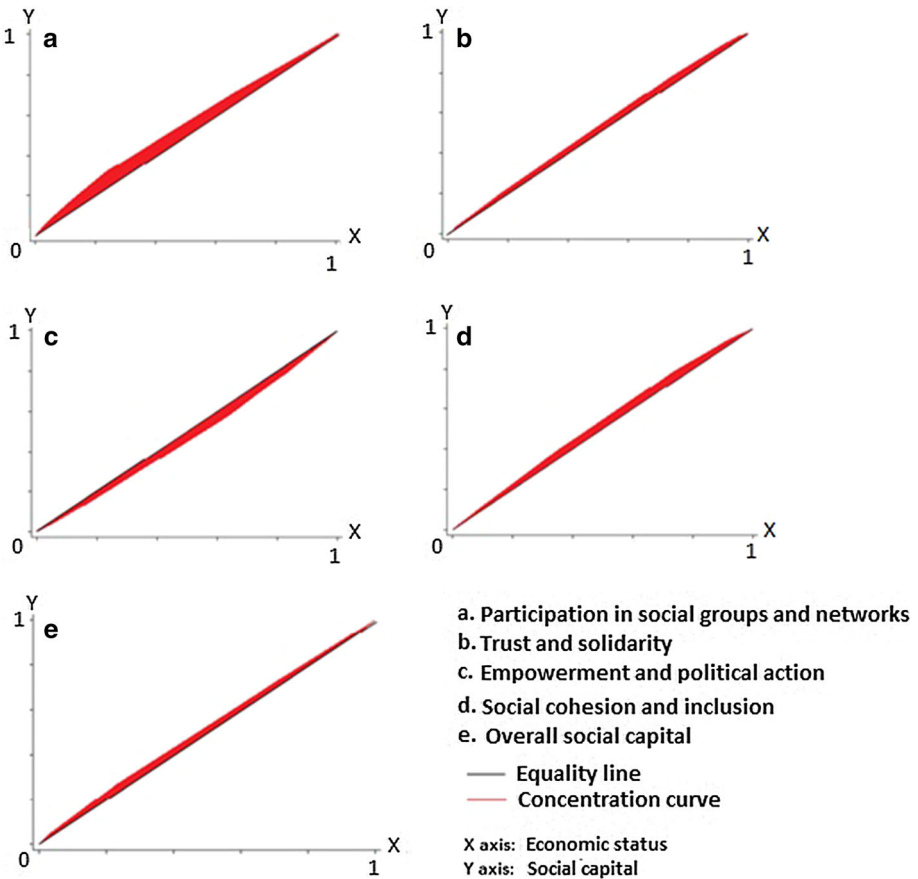


Fig. 1 Concentration curves of overall social capital and its dimensions/outcomes in Tehran, Iran

– 0.14); trust (WCI – 0.063, 95% CI – 0.084 to – 0.039); networks (WCI – 0.151, 95% CI – 0.177 to – 0.125); political action: (WCI 0.099, 95% CI (0.13–0.068); and overall social capital (WCI – 0.052, 95% CI – 0.078 to – 0.026). Given that low level of social capital was the variable of interest, as values of WCIs show, measured inequalities were pro-rich, except for political action, in which the inequality was pro-poor. In other words, weak political action was more concentrated among the rich, but weak networking, trust, cohesion, and overall social capital were more concentrated among the poor. To better understand the subtleties of distribution of social capital, Table 2 illustrates the means of social capital dimensions and outcomes for some selected composite variables. As the table shows, with betterment in socioeconomic profile of the composite variables, the mean of network, trust, cohesion, and overall social capital increases. In contrast, the mean of political action is better when the composite variable has a low-level socioeconomic profile.

Tables 3, 4 and 5 show the results for decomposition of inequality in overall social capital and its dimensions/outcomes. Table 3 shows the decomposition results for the two dimensions of network and trust. As the table shows, economic status and education accounted for most of the inequality observed in these dimensions. One interesting point was the remarkably large negative contribution (– 75%) of age to inequality in the trust dimension. Negative contribution means that, in overall, that variable decreases the level of inequality. In the network dimension, conversely, age had a positive contribution to the unequal distribution of weak networking. Table 4 illustrates the decomposition results for social capital outcomes of political action and cohesion. As can be seen, economic status and education had the highest positive contributions to inequality. Interestingly, age, in overall, had a negative effect on the unequal distribution of political participation, which was favouring the poor (i.e., it decreased the level of inequality). Eventually, Table 5 shows the decomposition results for overall social capital, in which economic status, family size (1–5), and education made the highest contributions to the inequality.

5 Discussion

This paper tried to shed light on the socioeconomic distribution of social capital in Tehran. According to our findings, social capital and its dimensions/outcomes are unequally distributed in Iran's capital, with the exception of the cooperation dimension. Moreover, economic status is the main determinant of the inequalities observed.

One interesting finding was the negative contribution of age to the unequal distribution of weak overall social capital, trust, cohesion, and political action, alongside its positive contribution to the unequal distribution of weak networking. The negative contribution of age in overall social capital, trust, and cohesion was due to two reasons: (1) a concentration of younger people among the rich; and, more importantly, (2) the higher elasticity between weak overall social capital/trust/cohesion and younger age. In other words, young people suffer from low levels of overall social capital/trust/cohesion, however, as they were more concentrated among the rich, this decreased due to the pro-rich inequalities. For political action, in which the inequality was pro-poor, the reason for negative contribution of age was that, as the younger people were more concentrated among the rich and were more likely to take part in political actions, this decreased the concentration of low levels of participation among the rich. This finding conflicts with life-cycle theory, according to which political participation increases with age (Highton and Wolfinger 2001). It is also

Table 2 Mean of social capital and its dimensions in selected composite variables in Tehran

Composite variable	Number	Mean	Standard deviation of mean
Network dimension (education + age group + economic status)			
(Illiterate) + (> 66) + (very poor)	66	5.37	3.03
(Primary school) + (> 66) + (very poor)	61	6.02	2.86
(Secondary school) + (18–25) + (very rich)	138	7.9	3.66
(Secondary school) + (18–25) + (poor)	64	7.81	3064
(High school) + (18–25) + (very rich)	143	8.14	2.88
Trust dimension (education + age group + economic status)			
(Illiterate) + (> 66) + (very poor)	66	17.6	3.36
(Primary school) + (> 66) + (very poor)	61	17.5	3.29
(Secondary school) + (18–25) + (very rich)	138	16.21	3.23
(Secondary school) + (18–25) + (poor)	64	16.5	2.83
(Secondary school) + (18–25) + (middle)	66	17.26	2.75
(High school) + (18–25) + (very rich)	143	16.56	2.64
Political dimension (education + marital status + economic status)			
(Illiterate) + (single) + (very poor)	65	50.44	12.23
(Primary school) + (single) + (very poor)	116	46.18	10.13
(Secondary school) + (single) + (very poor)	84	45.77	9.6
(Secondary school) + (married) + (rich)	136	44.15	10.25
(High school) + (single) + (rich)	111	44.04	8.76
(High school) + (married) + (rich)	163	43.13	8.22
Cohesion (education + age group + economic status)			
(Primary school) + (> 66) + (very poor)	61	31.52	5.57
(Secondary school) + (18–25) + (very rich)	138	31.7	5.15
(Secondary school) + (18–25) + (poor)	64	31.8	4.02
(Secondary school) + (18–25) + (middle)	66	31.85	4.9
(Secondary school) + (46–55) + (rich)	66	33	5.22
(High school) + (18–25) + (very rich)	143	32.32	4.72
Social capital (education + family size + economic status)			
(Illiterate) + (1–5) + (very poor)	106	30.39	6.04
(Primary school) + (1–5) + (very poor)	151	29.57	6.78
(Secondary school) + (1–5) + (very poor)	116	28.97	4.95
(Secondary school) + (1–5) + (rich)	309	30.65	5.06
(High school) + (1–5) + (very rich)	117	31.21	4.75

The variables in the composites were chosen according to their contribution to the measured inequalities. In fact, 3 variables with the highest contributions to the inequality in each dimension/outcome of social capital were chosen to construct the composites

conflicts with studies in western countries that show of a decline in institutionalised political participation among the youth (Marien et al. 2010). However, the reason for the positive contribution of age to inequality in networking was that, as belonging to younger ages was related to better networking, and since these groups were more concentrated among the advantaged, this led to an increase in inequality disfavouring the poor. Interestingly, all the above-mentioned findings accord with previous results about the erosion of

Table 3 Results of decomposition of inequality in network and trust dimensions in Tehran

Variable	Coefficient		Mean	Elasticity ^a		WCI _k ^b	Contribution to C		Contribution to C (%)	
	Network	Trust		Network	Trust		Network	Trust	Network	Trust
Age										
18–25	- 0.127	0.243	0.277	- 0.074	0.165	0.238	- 0.018	0.039	11.6	- 62.0
26–35	- 0.094	0.192	0.171	- 0.034	0.081	0.045	- 0.002	0.004	1.0	- 5.7
36–45	- 0.151	0.181	0.149	- 0.048	0.067	0.136	- 0.006	0.009	4.3	- 14.3
46–55	- 0.123	0.109	0.166	- 0.043	0.044	0.032	- 0.001	0.001	0.9	- 2.3
56–65	- 0.061	0.084	0.113	- 0.015	0.023	- 0.236	0.003	- 0.006	- 2.3	8.7
> 66	-	-	-	-	-	-	-	-	15.6	- 75.6
Family size										
(1–5)	0.001	- 0.075	0.894	0.003	- 0.164	0.099	0.000	- 0.016	-	25.6
(> 6)	-	-	-	-	-	-	-	-	- 0.2	-
Economic status										
Poorest	0.043	0.147	0.211	0.019	0.077	- 0.841	- 0.016	- 0.065	10.8	101.8
Poor	- 0.095	0.098	0.233	- 0.047	0.056	- 0.431	0.020	- 0.024	- 13.3	38.2
Middle	- 0.103	0.044	0.149	- 0.032	0.016	0.006	0.000	0.000	0.1	- 0.2
Rich	- 0.115	0.085	0.311	- 0.076	0.066	0.640	- 0.048	0.042	32.0	- 66.2
Richest	-	-	-	-	-	-	-	-	29.6	73.7
Occupation										
Employed	- 0.012	- 0.036	0.321	- 0.008	- 0.029	0.176	- 0.001	- 0.005	-	-
Unemployed	-	-	-	-	-	-	-	-	0.9	8
Gender										
Female	0.087	- 0.033	0.510	0.093	- 0.042	- 0.086	- 0.008	0.004	-	-
Male	-	-	-	-	-	-	-	-	5.3	- 5.7
Education										
Illiterate	- 0.095	0.004	0.092	- 0.018	0.001	- 0.595	0.011	- 0.001	- 7.2	0.9

Table 3 continued

Variable	Coefficient		Mean	Elasticity ^a		WCI _k ^b	Contribution to C		Contribution to C (%)	
	Network	Trust		Network	Trust		Network	Trust	Network	Trust
Primary school	- 0.104	0.063	0.181	- 0.040	0.028	- 0.420	0.017	- 0.012	- 11.1	18.6
Guidance school	- 0.139	- 0.045	0.428	- 0.126	- 0.047	0.141	- 0.018	- 0.007	11.7	10.5
High school	- 0.244	- 0.041	0.248	- 0.128	- 0.025	0.446	- 0.057	- 0.011	37.7	17.6
Academic	-	-	-	-	-	-	-	-	31.2	47.6
Marital status										
Married	- 0.005	0.014	0.638	- 0.007	0.022	- 0.066	0.000	- 0.001	- 0.3	2.3
Single	- 0.089	- 0.030	0.282	- 0.053	- 0.021	0.269	- 0.014	- 0.006	9.5	8.8
Divorced	0.083	0.322	0.007	0.001	0.006	- 0.296	0.000	- 0.002	0.2	2.7
Widow	-	-	-	-	-	-	-	-	9.4	13.7
Mean of network/trust			0.461/0.406							
Explained							- 0.139	- 0.055	91.8%	87.5%
Residual							- 0.012	- 0.008	8.2%	12.5%

As there was no inequality in cooperation dimension, no decomposition analysis was undertaken for it to be included in this table

Bold values show the total contribution of each variable (e.g. contribution of all sub-categories of economic status altogether) to the inequality

^aElasticity indicates the impact of each determinant on the desired outcome, i.e., how much change in the dependent variable is associated with one unit of change in the explanatory variable

^bWCI_k indicates the extent of unequal distribution of each determinant across economic groups

Table 4 Results of decomposition of inequality in political and cohesion outcomes of social capital in Tehran

Variable	Coefficient		Mean	Elasticity		WCI _k	Contribution to C		Contribution to C (%)	
	Politic	Cohesion		Politic	Cohesion		Politic	Cohesion	Politic	Cohesion
Age										
18–25	-0.049	0.074	0.277	-0.030	0.042	0.238	-0.007	0.010	-7.1	-8.6
26–35	0.100	0.074	0.171	0.037	0.026	0.045	0.002	0.001	1.7	-1.0
36–45	-0.043	0.017	0.149	-0.014	0.005	0.136	-0.002	0.001	-1.9	-0.6
46–55	0.036	0.031	0.166	0.013	0.011	0.032	0.000	0.000	0.4	-0.3
56–65	-0.028	0.020	0.113	-0.007	0.005	-0.236	0.002	-0.001	1.6	1
> 66	-	-	-	-	-	-	-	-	-5.3	-9.5
Family size										
1–5	0.031	0.016	0.894	0.060	0.029	0.099	0.006	0.003	-	-
> 6	-	-	-	-	-	-	-	-	6.0	-2.5
Economic status										
Poorest	0.107	0.236	0.211	-0.049	0.102	-0.841	0.041	-0.086	41.5	74.1
Poor	-0.083	0.188	0.233	-0.042	0.090	-0.431	0.018	-0.039	18.2	33.2
Middle	-0.137	0.160	0.149	-0.044	0.049	0.006	0.000	0.000	-0.3	-0.3
Rich	-0.030	0.148	0.311	-0.020	0.094	0.640	-0.013	0.060	-12.9	-52.0
Richest	-	-	-	-	-	-	-	-	46.6	55.1
Occupation										
Employed	-0.038	-0.003	0.321	-0.026	-0.002	0.176	-0.005	0.000	-	-
Unemployed	-	-	0.679	-	-	-	-	-	-4.7	0.3
Gender										
Female	0.002	0.062	0.510	0.002	0.065	-0.086	0.000	-0.006	-	-
Male	-	-	-	-	-	-	-	-	-0.2	4.8
Education										
Illiterate	-0.110	-0.116	0.092	-0.022	-0.022	-0.595	0.013	0.013	13.2	-11.2

Table 4 continued

Variable	Coefficient		Mean	Elasticity		WCI _k	Contribution to C		Contribution to C (%)	
	Politic	Cohesion		Politic	Cohesion		Politic	Cohesion	Politic	Cohesion
Primary school	- 0.045	- 0.023	0.181	- 0.018	- 0.009	- 0.420	0.007	0.004	7.5	- 3.1
Guidance school	- 0.012	- 0.016	0.428	- 0.011	- 0.014	0.141	- 0.002	- 0.002	- 1.5	1.7
High school	0.024	- 0.012	0.248	0.013	- 0.006	0.446	0.006	- 0.003	5.7	2.4
Academic	-	-	-	-	-	-	-	-	24.8	- 10.3
Marital status										
Married	- 0.092	- 0.083	0.638	- 0.127	- 0.108	- 0.066	0.008	0.007	8.5	- 6.2
Single	- 0.008	- 0.060	0.282	- 0.005	- 0.035	0.269	- 0.001	- 0.009	- 1.4	8.1
Divorced	0.002	0.093	0.007	0.000	0.001	- 0.296	0.000	0.000	0	0.4
Widow	-	-	-	-	-	-	-	-	7.1	2.3
Mean of political/cohesion			0.473/0.488							
Explained							0.074	- 0.047	74.4%	40.3%
Residual							0.025	- 0.069	25.6%	59.7%

Bold values show the total contribution of each variable (e.g. contribution of all sub-categories of economic status altogether) to the inequality

Table 5 Results of decomposition of inequality in overall social capital in Tehran

Variable	Coefficient	Mean	Elasticity	WCI	Contribution to C	Contribution to C (%)
Age						
18–25	0.019	0.277	0.011	0.238	0.003	– 5.0
26–35	0.056	0.171	0.020	0.045	0.001	– 1.7
36–45	0.027	0.149	0.008	0.136	0.001	– 2.2
46–55	– 0.038	0.166	– 0.013	0.032	0.000	0.8
56–65	– 0.001	0.113	0.000	– 0.236	0.000	– 0.1
> 66	–	–	–	–	–	– 8.2
Family size						
(1–5)	– 0.056	0.894	– 0.104	0.099	– 0.010	
> 6	–	–	–	–	–	19.8
Economic status						
Poorest	0.062	0.211	0.027	– 0.841	– 0.023	43.8
Poor	– 0.021	0.233	– 0.010	– 0.431	0.004	– 8.3
Middle	– 0.053	0.149	– 0.016	0.006	0.000	0.2
Rich	– 0.006	0.311	– 0.004	0.640	– 0.002	4.7
Richest	–	–	–	–	–	40.3
Occupation						
Employed	– 0.021	0.321	– 0.014	0.176	– 0.002	
Unemployed	–	–	–	–	–	4.8
Gender						
Female	0.037	0.510	0.039	– 0.086	– 0.003	
Male	–	–	–	–	–	6.5
Education						
Illiterate	0.031	0.092	0.006	– 0.595	– 0.003	6.7
Primary school	0.093	0.181	0.035	– 0.420	– 0.015	28.0
Guidance school	0.060	0.428	0.053	0.141	0.007	– 14.4
High school	0.008	0.248	0.004	0.446	0.002	– 3.6
Academic	–	–	–	–	–	16.8
Marital status						
Married	0.003	0.638	0.004	– 0.066	0.000	0.5
Single	– 0.037	0.282	– 0.022	0.269	– 0.006	11.2
Divorced	0.232	0.007	0.003	– 0.296	– 0.001	2.0
Widow	–	–	–	–	–	13.8
Mean of overall social capital		0.487				
Explained					– 0.049	93.8%
Residual					– 0.003	6.2%

Bold values show the total contribution of each variable (e.g. contribution of all sub-categories of economic status altogether) to the inequality

traditional social capital and the weak establishment of modern social capital in Iran (Amini Rarani et al. 2011), as young generations are great at networking but lack the ability to fortify that networking with trust, reliance, and concrete adherence. For Iran, as

one of the countries with the highest percentage of young people in the world, these findings can be of importance in future social development plans.

Participation in associations, networks, and groups is often considered as fundamental for social capital formation (Wollebaek and Selle 2002). Social Participation in networks, however, was unequally distributed in Tehran, favouring the rich. There might be several reasons for this, for example, the poor are more likely to be heavily engaged with their daily hassles and subsistence and have less time to participate in groups, networks, and associations. Interestingly, being married had a negative relationship with poor level of social network, but being single had a much stronger negative relationship; i.e., being single leads to more social networks participation and higher inequality as single people are more concentrated among the rich.

Trust is considered as a key source for social capital (Putnam 1995; Adler and Kwon 2002). This source was shown to be unequally distributed in Tehran, favouring the richer people. Economic status and education level accounted for most of the inequality. These findings are somewhat in line with what have been discovered in other studies from Iran (Baheiraei et al. 2016a, b; Ashrafi et al. 2012), that is, that higher trust is more concentrated among advantaged people, something that may facilitate interactions and transactions and lead to further improvements in socioeconomic status (Knack 2002).

Social cohesion has been one of the main research branches in the social sciences, for example, in Wilkinson's income inequality and social cohesion model (Muntaner and Lynch 1999). This model shows that egalitarian countries are more socially cohesive and that this translates into better social and health outcomes through psychosocial pathways (Hsieh and Pugh 1993; Wilkinson 2000). However, social cohesion was unequally distributed in Tehran. One unexpected finding in our study was that education decreased the unequal distribution of weak social cohesion, disfavoring the poor. This is due to a negative elasticity between education status and weak cohesion level, indicating that higher education in Iran loosens the cohesiveness of interactions. This matter is very interesting, as education is an apt route to promote social cohesion. One explanation for this finding is that quality education leads to promotion of social cohesion (Green et al. 2003) and quality has always been a challenge for Iran's educational system (Farasatkah et al. 2008).

One of the most interesting findings of the present study was that political participation was more concentrated among the poor in Tehran. It has been postulated that, in theory, higher social capital should be mobilised into higher political engagement (Lowndes 2004; Putnam 2002). However, evidence for such a relationship is mixed and challenging (Huckfeldt 1979; Gallego 2007; Armingeon and Schädel 2015). For example, there is some evidence that higher education increases political participation (Gallego 2007), a result that is not in line with our decomposition findings. Baheiraei et al. (2016a, b) reported a similar finding to the present study in their study on women of reproductive age in Tehran. However, they reported that employment had no effect on political action in Tehran, a finding that is in conflict with our findings. Nonetheless, our findings are very appealing from at least one point of view. That is, despite the low level of social capital among the worst-off, they do turn out more in political activities in Tehran. The explanation for this result could be a very interesting research question to pursue in future studies about political participation in Iran.

Another thought-provoking finding in our study was that, in terms of the cooperation dimension, there was no significant inequality in Tehran. There is a slew of research in social psychology about the dynamics of cooperation and collective action (Van Zomeren and Iyer 2009). According to this research, deprivation and injustice are motivations for

collective action and cooperation among social groups, especially deprived ones. For advantaged groups, it is intergroup social norms and identity that foster cooperation, especially when they act so as to maintain oppression over the disadvantaged (Van Zomeren and Iyer 2009). This evidence may somehow explain the findings of our study. In fact, it might be possible that perceived deprivation pushes the disadvantaged in Tehran to cooperate more with each other, while the levels of trust, cohesion, and network engagement among them are not so strong. Against such a finding, Nieminen et al. (2008) reported that there was a significant connection between income and social cooperation in the Netherlands. Ashrafi et al. (2012) also reported a significant relationship between income and cooperation in Tehran, an issue that might emanate from differences in measurement, but one which undoubtedly warrants more focus in future research.

5.1 Implications

Considering the findings, some policy implications of the present study can be suggested. First, our study showed that economic status is the main determinant of inequalities in social capital in Tehran. Therefore, any economic plan that is to redress the economic gaps in the country, like the recently adopted targeted subsidies plan, can potentially lead to improvements in the social capital of the disadvantaged. Moreover, policies that aim to improve education levels in the country, especially those that aim to expand academic education to the hard-to-reach places, may be of benefit in increasing the social capital levels among the disadvantaged. However, for cases like the negative relationship between higher education and cohesion, there should be strategies that prevent the separation of people with higher education from the rest of the society. Social cohesion can be considered as emerging from high levels of trust and reciprocity that link different social groups. The establishment of associations that bring academic groups into the public can be a strategy to create such cohesive links, something that is currently lacking in Iran. Furthermore, there should be strategies that invest in young Iranian people who suffer from lower levels of trust, social capital, and cohesion, but enjoy higher levels of social networking, especially among the better-off. This matter might be related to the growing modernisation of Iranian society, in which traditional values of trust, reciprocity, sociability, cooperation, etc. are being challenged without being fully replaced with alternative options. Strategies that can re-define the traditional values may be of value in a tradition-rich, young, and dynamic society like Iran. Iran has always been a cooperation-focused society, in which, due to religious and cultural factors, cooperation has been of a high value. This positive feature can also be used to better bring groups and people together and redress the inequalities in the country.

Moreover, human beings greatly care about their friends and relationships, and such a caring, shown as social capital, has its own merits. The health effects of social capital are one of its main merits. Even though this paper did not aim to directly investigate for health implications of social capital, it is worth at least recognising them for Iranian society. There have been a few studies about social capital effects on health outcomes in Iran (Rimaz et al. 2015; Baheiraei et al. 2016a, b; Hassanzadeh et al. 2016). For example, it has been shown that social capital is a strong determinant of mental-health status in Tehran (Ashrafi et al. 2012; Hassanzadeh et al. 2016). However, there have been few studies that reveal the mechanisms through which inequalities in social capital potentially affect peoples' health in Iran. In a study by Baheiraei et al. (2016a, b) on women of reproductive age in Tehran, a significant relationship was found between dimensions and outcomes of social capital and socioeconomic variables (age, ethnicity, marital status, income, etc.). In

fact, the findings showed that social capital was unequally distributed among Iranian women in Tehran. They also showed that social capital is highly associated with women's health in Tehran. Consequently, they postulated that inequalities in social capital may lead to inequalities in health outcomes (e.g. mental health), though no relevant mechanism was suggested. However, following that research, the present study can be of importance in three ways: (1) it provides further evidence that social capital is unequally distributed in Tehran. More importantly, (2) it might have implications for understanding the mechanisms that link social capital inequalities to health inequalities. For instance, it might imply that, since economic status is the main contributor to health and social inequalities in Iran, it might act as a link in a causal loop that determines and regulates the association between social capital and health. Moreover, (3) our study directly points to factors that, if changed, could have remarkable effects on the unequal distribution of social capital and health outcomes. However, it is important to notice that, in terms of the relationship between social capital and health, there has been no attention paid to the potential reverse causality and endogeneity problems (Fiorillo and Sabatini 2015; Arezzo and Giudici 2016) between them in Iran; a very important matter that should be accounted for in future mechanism studies in Iran.

5.2 Questionnaire Considerations

Due to social and cultural differences and sensitivities, faculty members at Tehran University of Medical Sciences were interviewed and their ideas about the questions in the World Bank's questionnaire were sought before standardisation and data gathering. Accordingly, six new questions were added to the questions pool about "social class homogeneity preferences among neighbours, friends, husbands/wives, co-workers" and "people's interest in and follow-up of political news". Questions about trust in different government officials and social groups were also expanded into more detailed ones (trust in 10 different officials and 21 social groups). The reason for adding these questions about homogeneity is because of some evidence about dominance of the bonding type of social capital in Iran (Abdollahi and Mousavi 2007; Amini Rarani et al. 2011). Moreover, the World Bank's questionnaire considers some features, such as leadership and structure in social networks, that can be difficult to pin down in Iranian networks. In terms of the political domain questions, the World Bank's questions seemed tough to answer, so the questions were changed so that they can match up with Iranian people's interest in political issues. Overall, these changes made the questionnaire more culturally suitable to be used in Iran (Nedjat et al. 2013).

5.3 Limitations

There were some limitations in the present study that should be borne in mind when assessing and generalising the results. The main limitation was that, as there was no cut-off point for the validated questionnaire, the authors used the median as cut-off to group people into two categories of high and low social capital. This might cloud our findings in some ways and needs careful consideration. Future studies in Iran should, therefore, at first determine a standard cut-off point for the questionnaire and then embark to investigate distribution of social capital across the country. Furthermore, as the findings come from a cross-sectional study, any causal attribution should be cautiously avoided, as longitudinal studies are needed for such attributions. Moreover, drawing comparisons between this study and other studies might be challenging, as social capital is defined and measured in

different ways in different studies. This matter should also be borne in mind when contemplating the paper. However, Inclusion of social capital standard questionnaires into increasing health-related cohort studies in Iran can be of great help in terms of both causal attributions and comparability of the findings, at least in local level.

6 Conclusion

Social capital is unequally distributed in Tehran, disfavoring the disadvantaged. Economic status and education were the main reasons behind such inequalities. Therefore, socioeconomic development plans that try to redress the economic and educational inequalities in the country would be of high value for also redressing the current inequalities in social capital. More interestingly, the poor people in Tehran, despite enjoying less social capital, are more politically engaged and active than their middle- and upper-class counterparts. This matter can have some implications for current general theories about social capital, its effects, and its distribution within and across societies. Moreover, there were some modifications made to the original questionnaire so that it can accommodate Iranian cultural peculiarities. In fact, the measurement of social capital by the questionnaire was modified and adapted so that it could reflect the intricacies and details of the nature of social capital in Iran. This matter can also be of importance, both methodologically and theoretically, as it can be a role model to be used in other cultures, showing that one can produce context-specific knowledge of social capital distribution, which, nonetheless, has international implications.

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