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Socioeconomic Determinants of Social Capital Inequality among Older Adults of Tehran: A Population-Based Study (Urban HEART-2)

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Abstract

Background: Social capital (SC) is an essential concept of communities, and there is more SC inequality. In the current study, we studied SC Inequality concerning the explanatory socioeconomic factors.

Methods: In a cross-sectional observational study, the household data were retrieved from an Urban Health Equity Assessment and Response Tool survey in 2011. Over 5000 elderlies in Tehran (> 60 years old) consented toparticipate in the study and filled out 2 SC questionnaires (SCQ) and a household properties questionnaire (HPQ). Subsequently, the collected HPQ data were then statistically analyzed and used to measure the economic status of households. Besides, the statistical concentration index of the SC was applied to measure socioeconomic inequality and decomposed into its determinants using both SCQ and HPQ data collections. The concentration index and the decomposition analysis were used to analyze the study data.

Results: The overall concentration index of the SC in Tehran senior citizens was 0.059 (95%CI,0.044-0.076). Among the SC dimensions, collective activity, social coherence, voluntary help, and social network were more concentrated in the poor older adults. Simultaneously, reciprocity was more focused onthe wealthy class, and there was no inequality in trust. The decomposition of the concentration index showed that economic status made the most considerable contribution to the SC inequality among citizens (69.11%), followed by the level of education (12.695) and the elderlies'job type (9.58%).

Conclusion: Given that the economic status and level of education are the 2 main determinants of SC inequality, a holistic policy approach should be adopted to address the socioeconomic inequalities that are taken root in Tehran's senior communities.

Keywords: Social Capital, Socioeconomic Determinants, Inequality, Older Adults

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Introduction

Studies on SC in the elderly have been rising as the elderly population is growing worldwide. SC is essential in later life stages and is associated with health (1, 2) and quality of life (3) in the elderly. Studies have also shown that social SC is associated with depression (4, 5), loneliness (6), cognitive impairment (7), well-being (8, 9), and life satisfaction (10, 11) in the elderly. Although there are many concepts and theories about the SC, the SC can generally be considered a set of social networks, social exchanges, and norms that facilitate intragroup and intergroup relations (12–15).

Many studies have examined the role of social capital in

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↑What is "already known" in this topic:
Social capital is an important feature of a healthy life and subjective wellbeing of the elderlies; however, there is unequal distribution of social capital in communities.

→What this article adds:
There is also an unequal distribution of the social capital in the elderlies, in which the rich take more share of the social capital than the poor. The study revealed that the economic status and education has the highest contribution in the equality of the social capital in the elderlies.

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the fields of economics (16, 17), politics (18, 19), and health (20, 21) , and even certain groups such as the elderly (10, 22, 23). Suppose we accept that the SC, like other forms of capital, such as human capital and economic capital, would generate a valuable return (24). In that case, the SC as a potential asset can be subject to unequal distribution in society (24, 25). Studies have also shown an inequality in SC (26, 27). Shadi et al have shown that rich people have more SC (26). It seems that SC inequality can be explained by factors such as economic status (26-31), education (26), gender (32-34), and race (32, 35). Studies have shown that wealthy people maintain more social relationships in the long run (36), and people with higher education have higher social participation (37).

Studies have also shown that the unequal distribution of the SC can have a wide range of consequences, such as poverty (27), violence (38), and increased mortality (28). Inequality in the SC in the elderly can be even worse because social capital can be a component of successful aging (39–41). Apua has also shown that inequality in the SC of the elderly has adverse effects on their well-being (42).

Researchers believe that SC inequality is rooted in the other types of capital inequalities, including human and economic capitals. Pierre Bourdieu believes in different kinds of capital, such as economic, cultural, symbolic, and social. In his view, different types of capital can be transformed, and it is the economic capital that is the basis for other kinds of capital, including SC (43). Putnam argues that SC can also be associated with inequality (44). Apua attributes SC inequality to the structure and perception of the capital; the size of the social network, and individuals' perceptions of their social network (42). However, Lin points to more fundamental differences in the formation of SC inequality. He listed 2 mechanisms for inequality in SC: (1) socioeconomic stratification, which results from opportunities of different social groups, and (2) homophily (24). In socioeconomic stratification, people are a social network because of socioeconomic similarities, such as income and education. However, people with hemophilia who are similar in terms of race, gender, religion, social class, et cetera, are classified in the same social network.

Studies have also shown that SC changes at different life stages (33, 45), and aging is one of the most critical SC variables (46). Older adults may lose their health and face a lack of social and economic resources, which may cause SC inequality at the micro, medium, and macro levels (47). For example, when an older adult retires, their social network changes from formal and organizational to informal and personal (48). The immobility, increasing disabilities (49) and chronic diseases (50), or even the death of family members and friends (51) lead to a decrease in social network, and ultimately their SC (33, 52). On the other hand, when people enter the elderly period of their life, they have already enjoyed different level of SC, and this can cause inequality in SC among the elderly as well. Danfar argues that this different baseline increases the accumulation of benefits and disadvantages (53, 54). Therefore, the elderly population can be subject to more SC inequality than other age groups.

Iran's population is aging rapidly. According to the World Health Organization, only 10% of the population were over 60 in 2015, while it will be 33% in 35 years (55). The Iranian elderly are mainly supported by their family members (56), which is heavily influenced by their age, gender, education, and income (23, 57, 58). This situation of the Iranian elderly puts them more at risk of SC inequality.

Since SC has a vital role in the health of the elderly, the present study aims to address the cumulative effects of socioeconomic inequality over a lifetime in the SC of the Iranian elderly. The determination of the amount of inequality in the SC of the elderly was performed on data collection retrieved from the Urban-Health Equity and Response Tools-2 (Urban-HEART-2) using the decomposing method.

Methods

Sampling Procedure

A cross-sectional study was conducted on a sample of Tehran elderlies, retrieved from the data collection of the Urban-HEART-2 initiative launched in Tehran, Iran, in 2011. To this end, a multi-stage sampling procedure was followed: First, all 22 districts and 380 neighborhoods of Tehran were taken as stratums (except for 6 neighborhoods that were excluded from the study due to their inaccessibility for security reasons). Within the neighborhoods, blocks were spotted. The blocks were collecting at least 8 households surrounded by alleys and/or streets, with the exclusion of rings for the vacant houses/apartments and business places. These blocks, subsequently, were taken as clusters, from which 200 blocks were chosen via a systematic sampling approach from each district, regardless of the district's population size. However, the number of blocks assigned to the neighborhoods was proportional to the neighborhood's size. Then, within the blocks, the households were taken as clusters, and 1out of 8households were selected systematically from a random starting point in the block. Finally, a census was conducted for the number of family members, their age, and sex (The house/apartments that did not answer the census agent were left without substitution). Through the mentioned sampling procedure, 118,542samples (from 34,700 households) were taken, which fell into 8 boxes according to the age range and sex, out of which 2 boxes were above the defined age (>60 years) in the study. About 37% of these elderlies (5670 out of 15,069) agreed to participate in the study and fill out the socioeconomic status questionnaire (SESQ) and the SC questionnaires (SCQ).

Sample Size

The sample size was determined for each district independently according to the Cochrane formula:

$$\frac{Z^2_{\alpha/2}+p(1-p)}{d^2} \quad Eq.1.$$

This was based on variables with at least 10% prevalence with a margin of error (d) of 0.015 and a confidence interval (CI) of 95%. Subsequently, the sample size was round up to 1600 households, regardless of the district's

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population size. More details of sampling are given in the articles (59, 60).

Questionnaires

The socioeconomic status questionnaire (SESQ) asked for the participants' information regarding their sociodemographic, work-related, and properties-related information. The sociodemographic data included age (60-75, 75-85, and > 85), sex, marital status (married, single, divorced, and widowed or widower), educational level (illiterate, ability to read and write, high school diploma, and academic education) and ethnicity (Fars, Turk, and others). The work-related data consisted of a previous job (part-time worker, full-time worker, office job, and employer) and the type of retirement insurance coverage (social security, governance, private, noncovered, and others). Considering the properties and belongings, the data were analyzed and grouped using principal component analysis. These included the real estate ownership status (rented/owned), the constructed area per capita (in m2), the house parts (eg, number of rooms, kitchen, and bathroom), house appliances (eg, phone line, freezer, and microwave) and their personal belongings (car, cellphone, computer). This questionnaire had been evaluated previously (61) before reevaluation in our study based on the Cronbach alpha score.

Statistical Analysis

Using the questionnaires mentioned above, the entire population's SC status and the studied social classes (sex, level of education, etc.) were determined using STATA (Version 14.0) software (STATA Corp). Moreover, the previously-mentioned dimensions of SC were also determined.

First, the SESQ was subjected to the principal SCQ, consisting of different dimensions of the social capital evaluated previously. There were a total of 69 questions in 6 other domains of social capital (ie, social coherence, collective activity, reciprocity, voluntary help, social network, and trust) at the level of family, relatives, and friends, coworkers, associations, ethnic group, and the public. For instance, how much the participants could trust their family, relatives and friends, coworkers, associations, ethnic groups, and the population was assessed using a 5-level Likert scale. This questionnaire was evaluated previously (62) befe reevaluating our study based on the Cronbach alpha score.

After the PCA, the primary component was used as the population's economic status divided into quintiles. These included the poorest, the poor, the medium, the rich, and the richest.

Then, the SCQ scores for each participant were changed to dummy values. To this end, the SC median score of the elderly population was set as the cutoff point. This cutoff point was also determined for the different SC domains, trust, collective activity, et cetera, based on the population's median score in each category. Subsequently, the participants with SC scores below the median score was given 0, and those with scores above the average was given +1.

Subsequently, the cumulative percentage total scores of the dummy values ($X = \sum_{i=1}^{n} n = 5760$) of the participants' primary components was applied to calculate the amount of the inequality (concentration index or CI, Eq. 2) in social capital and its dimensions (Yi) in the entire elderly popution (63):

$$CI = \frac{2}{n\mu}\sum_{i=1}^{n} YiRi - 1 \quad Eq.2.$$

Where μ denotes the mean of Yi and Ri represents the fractional rank of each participant's economic status. CI is the double the area between the attained curve (named as concentration curve) and the equity line (45° straight line). When CI equals zero, it infers no inequality; when CI becomes positive, it means that the accumulation of the social capital (and its dimensions) is in the rich class; and when CI becomes negative, it indicates the accumulation of the social capital in the poor class.

Then, the decomposition analysis was performed to rank the dummy social variables (age, sex, marital status, etc.) in terms of their contribution to the final attained CI in the population, according to Equation 3 (62).

$$yi = a + \sum_{k} \beta_k \, x_k + \in \quad Eq.3.$$

Where yi is the CI achieved for a set of k determinants (X_k), βk shows the logistic coefficient, and Є is the error.

Given the relationship between the yi and X_k, the CI for yiis as follows (64):

$$CI = \sum_{k} (\beta_k \, \overline{x}_k/\mu) C_k \; + \; GC_{\in}/\mu \; Eq.4.$$

where μ is the mean of y, xk is the mean of x_k, Ck is the normalized concentration index for x_k (using Wagstaf normalization, Eq. 5), $\sum_k(\beta_k \, \overline{x}_k/\mu)$ is the social capital's elasticity with explanatory variables, such as age groups, gender, education level, et cetera, and GCe is the residual component.

$$CI \; normalized = CI \; /1 - \mu \; Eq.5.$$

Results

In the current study, 2 questionnaires were used: (i) the SESQ to assess the social and economic status of the elderly participants; (ii) the SCQ to assess the SC and its dimension distribution.

The wealth was found to be somehow evenly distributed (Table 1, economic status row) according to the elderlies' belongings and properties assessed and the primary component achieved by the PCA. However, there was a minor variation. Most of the elderlies' population fell into the "richest" quintile (22.18), and the least was in the "rich" (18.5%). The frequency of the remaining economic classes was almost 20%.

Considering the sociodemographic data, there was more variation in the studied elderly population. Most of the population (80.73%)were between 60 and 75 years and had the ability to read and write (37.32%). The Fars ethnic group was the largest group, with 58.47% frequency. The number of elderlies retired earlier was a slightly higher than that of retired ones who had already been employed

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Table 1. SC and its dimensions scores among Tehran elderlies according to SESQ and SCQ in different sociodemographic and economic layers

Variable		Number (%)	Social capital dimensions (Mean ± SD)						
			Social coherance	Collective activity	Reciprocity	Voluntary help	Social network	Trust	Total social capital
Age	60-75	4650 (80.73)	2.01±0.81	2.02±1.10	2.27±0.80	2.76±0.80	2.87±1.02	2.88±0.83	2.50±0.56
	75-85	996 (17.29)	1.95±82	1.93±1.08	2.29±0.83	2.83±0.84	2.82±1.07	2.89±0.87	2.49±0.58
	>85	114 (1.98)	1.80±0.77	1.72±1.11	2.24± .87	2.72± .92	2.75±.82	2.75± .91	2.34± .58
Sex	Male	2739 (47.55)	2.93±0.83	2.05±0.82	2.26±0.80	2.94±1.01	2.08±1.11	2.82±0.82	2.54±0.56
	Female	3021 (52.45)	1.95±1.08	1.93±0.83	2.27±0.81	2.73±0.80	2.79±1.04	2.84±0.85	2.45±0.56
Marital status	Married	4067 (71.33)	2.93±0.83	2.03±0.81	2.28±0.81	2.91±1.01	2.04±1.09	2.81±0.81	2.53±0.44
	Others	1635 (28.67)	2.78±0.86	1.92±0.80	2.25±0.80	2.72±1.07	1.90±1.10	2.68±0.83	2.41±0.57
Education stats	Illiterate	1434 (25.17)	2.76±0.83	1.94±0.78	2.33±0.82	2.65±1.06	1.74±1.01	2.71±0.82	2.40±0.56
	Ability to read and write	1199 (21.05)	2.88±0.84	2.00±0.79	2.35±0.83	2.86±1.02	2.02±1.12	2.78±0.82	2.51±0.57
	High school Diploma	2126 (37.32)	2.92±0.84	2.03±0.84	2.25±0.81	2.92±1.01	2.10±112	2.79±0.81	2.53±0.57
	Academic Education	938 (16.46)	2.98±0.81	2.93±0.80	2.11 ±0.73	3.03±0.98	2.17±1.09	2.81±0.79	2.54±0.54
Economic status	Poorest	1054 (20.00)	2.99 ±0.79	2.07±0.79	2.16±0.75	2.07±0.94	2.13±1.08	2.84 ±0.78	2.57±0.53
	Poor	1050 (19.92)	2.91±0.83	1.99±0.81	2.28±0.84	2.90 ±1.00	2.06±1.06	2.79±0.80	2.51±0.54
	Middle	1046 (19.85)	2.91±0.83	2.01±0.82	2.32±0.80	2.91±1.02	2.05±1.14	2.78 ±0.83	2.53±0.58
	Rich	951 (18.05)	2.81±0.85	1.99±0.80	2.26±0.80	2.76±1.01	1.90±1.08	2.71±0.83	2.44 ±0.57
	Richest	1196 (22.18)	2.76±0.85	2.91±0.78	2.33±0.82	2.64±1.09	1.84±1.07	2.72±0.82	2.40±0.56
Ethnicity	Turk	1326 (23.37)	2.88±0.81	2.06±0.80	2.34±0.82	2.83±1.03	2.94±1.07	2.78±0.79	2.50±0.55
	Fars	3318 (58.47)	2.88±0.85	1.98±0.81	2.24±0.79	2.89±1.01	2.01±1.10	2.78±0.82	2.50±0.56
	Others	1031 (18.17)	2.87±0.85	1.97±0.81	2.28±0.81	2.78±1.08	2.03±1.13	2.75±0.82	2.47±0.58
Retirement	Social security	1519 (29.46)	2.90±0.83	2.02±0.81	2.29±0.80	2.85±1.02	2.02±1.11	2.82±0.84	2.51±0.57
	Governance	881 (17.08)	2.93±0.84	2.01±0.81	2.18±0.75	2.90±0.99	2.08±1.09	2.77±0.79	2.51±0.55
	Private	126 (2.44)	2.91±0.90	2.09±0.85	2.19±0.83	2.95±1.07	2.23±1.18	2.82±0.89	2.54±0.61
	Others	235 (4.56)	2.84±0.80	2.01±0.77	2.17±0.75	2.91±0.96	2.20±1.16	2.70±0.75	2.49 ±0.52
	Non-covered	2396 (46.46)	2.86±0.84	1.97±0.80	2.29±0.82	2.83±1.03	2.94±1.07	2.76±0.80	2.47±0.56
Job	Part-time worker	678 (12.22)	2.76±0.88	1.99±0.81	2.27 ±0.81	2.72±1.05	1.85±1.02	2.67±0.83	2.41±0.57
	Full-time worker	3611 (65.06)	2.88±0.83	1.99±0.80	2.31±0.82	2.83±1.03	1.97±1.10	2.77±0.81	2.49±0.56
	Office job	449 (8.09)	3.00±0.84	2.04 ±0.89	2.17 ±0.77	3.03±1.00	2.33±1.15	2.88±0.85	2.59±0.56
	Employer	812 (14.63)	2.94 ±0.82	2.00±0.83	2.17±0.76	2.95 ±0.97	2.12 ±1.10	2.80±0.79	2.53±0.55

(46.44% vs 65.6%). About 29.46% were under social security insurance coverage. The elderlies with academic education and those belonging to “other” ethnicities stook the minor share, with 16.46% and 18.17%, respectively.

The validity and reliability of the SCQ had already been examined in the Urban Health Equity Assessment and Response Tool (Urban HEART-2) study, and in our research, the Cronbach alpha for the social capital was 94%. This Cronbach alpha varied from 69% to 94% in the 6 domains of SC.

Distribution and Dimensions of Social Capital in the Socioeconomic Strata

Tehran elderlies' descriptive features are in terms of the levels of SC dimensions are provided in Table 1. In general, the total SC was significantly reduced with increasing age and increasing economic status (wealth). Although social capital was higher in men, there are some SC dimensions that are at the same level as or higher than men. Married couples had more elevated social capital than “others” group (consisted of the widowed, divorced, single, and unmarried participants); there was a subtle increase in the social capital in the citizens with academic education; however, the social capital was substantially lower in the "illiterate” group. Finally, “Social coherence”, “voluntary help”, and “trust” were the most noticeable dimensions that varied among different ethnic groups, jobs, and retirement insurance coverage.

Considering the economic data, the PCA analysis results revealed 5 significant components of properties of elder-

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lies in Tehran. The primary component explained 20.4% of the economic status, followed by the second component, which explained 13.8%. The other 3components explained less than 9% of the economic status. Together, all these parameters explained 58% of the economic status of the elderly's households.

Inequality of SC and SC Dimensions in the Elderly

Figure 1 depicts the concentration curve (and CI values) in the SC and SC dimensions. The area between the curve and the equity line is also shown in gray. The SC concentration for all SC dimensions was significant, except for the "trusts". The SC concentration index was +0.059 (Fig. 1A). Among the dimensions, the highest positive concentration index is for "voluntary help" at 0.068 (Fig. 1B), followed by "social network", "social coherence", and "collective activity" (95%CI, 0.018-0.095) between 0.057 and 0.059 (Fig. 1C and 1E). The concentration index of "reciprocity" and "trust" is negative, at -0.074 and -0.018, respectively (Fig. 1F and 1D).For "reciprocity," the concentration index's gray area stands above the equity line (oblique 45-degree straight line) between -0.102 and -0.046 in terms of CI, and for "trust," the equity line is surrounded by a narrow gray area from -0.018 to +0.018, which was nonsignificant as the CI of "trust" confidence interval varied from the opposing figure to the positive.

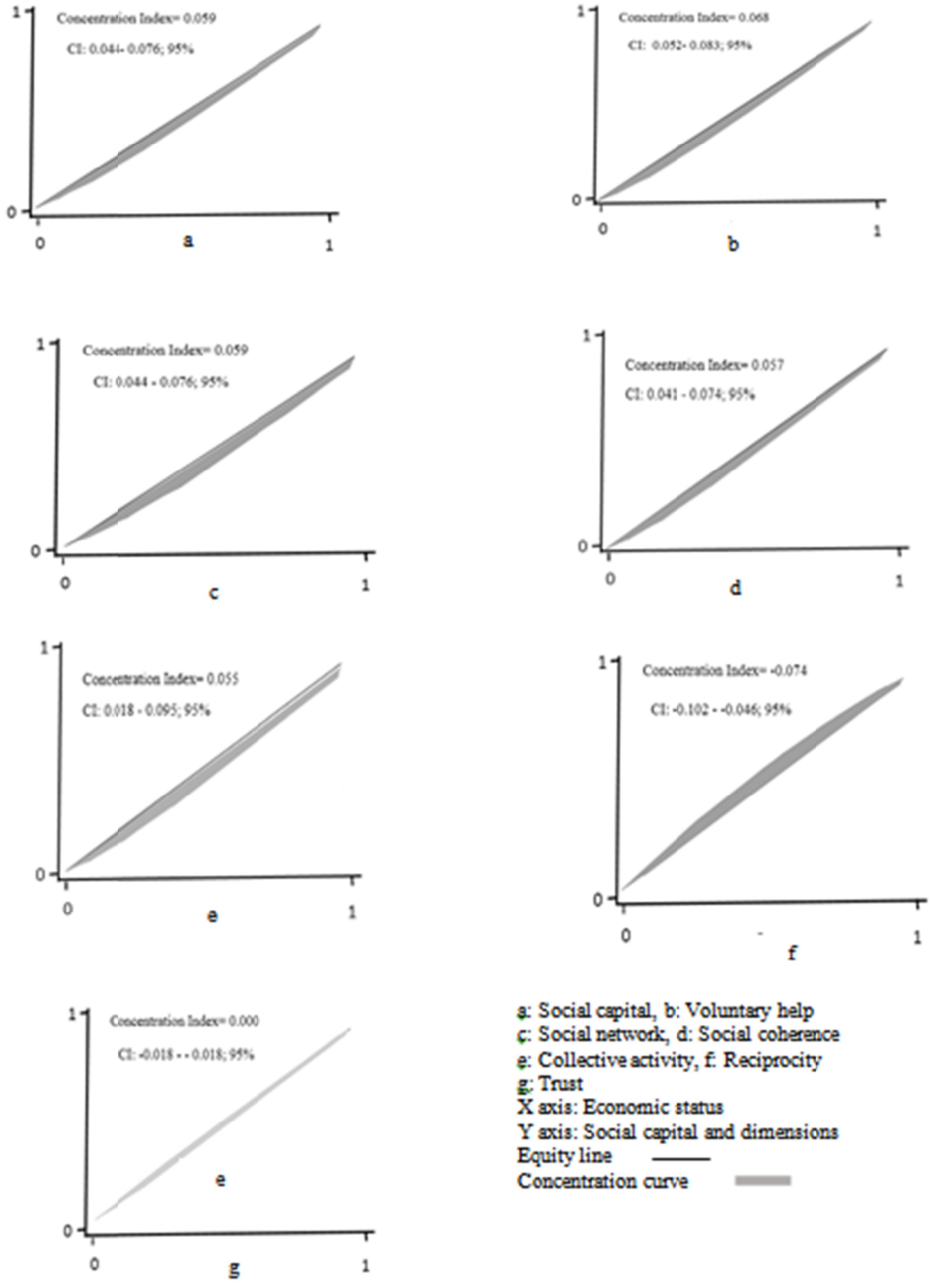

Fig.1. Concentration curve of social capital and its dimentions in Tehran elderlies

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Subsequently, the decomposition method was used to explain the concentration index (CI) level concerning the socioeconomic data (Table 2). Compared with age at >85 (referenced as zero in the table), we see that the total SC and social capital dimensions' concentration increase toward positive figures in the 60-75 age group. The contribution of the age 60-75 to the CI stands at +11.3 for SC, with "collective activity" and "reciprocity" having the highest and lowest contribution, among other dimensions at +33.3 and +1.9, respectively. On the other hand, the contribution of the 75-85 age group to the CI in the total SC and SC dimensions lies within a negative range, denoting the contribution less than that of the >85age group. The exception is the "reciprocity" share that stands at +2.84.

The same pattern can also be seen concerning the percentage contribution of sex in the CI. Being a female was accompanied by a positive contribution in the CI of social capital and the dimensions, with "collective activity" having the highest contribution at 26.85. The contribution in other dimensions remained between 3 and 8, indicating a higher female contribution to the male. In "reciprocity" category, the contribution was negative, standing at -4.12 showing a lower contribution of the female to the CI than the male.

Compared with "academic," the level of education had the highest percentage of contribution to the CI in the "reciprocity" dimension, with "illiterate" and "ability to read and write" having the highest positive contribution to the CI, 32.33 and 13.83, respectively. Being "illiterate" contributed positively to the CI in the total SC and all other dimensions, except for "collective activity," where illiteracy contributed negatively to the CI (-16.04). Moving to the "ability to read and write" group, their contribution to the CI was minimal and negative for the overall SC and SC dimensions (between -2 and 0), except in the "collective activity," where the contribution was higher at -6.9. "High school diploma" also showed the same level of contribution to the CI, the highest positive contribution to the CI in "collective activity" (18.72), and a negative contribution to the "reciprocity" (-14.91).

Concerning the contribution within different layers of

Table 2. Results of decomposition of inequality in SC and dimensions

Variable		Social coherence	Collective activity	Reciprocity	Voluntary help	Social network	Total social capital
Age	Age (60-75)	6.521[a]	33.315	1.950	12.621	4.369	11.280
	Age (75-85)	-10.120	-26.132	2.845	-14.039	-4.981	-13.189
	Age (>85)	0.000	0.000	0.000	0.000	0.000	0.000
	Sum	-3.599	7.183	4.795	-1.418	-0.612	-1.909
Gender	Female	7.392	26.851	-4.121	3.643	8.098	7.392
	Male	0.000	0.000	0.000	0.000	0.000	0.000
Marital status	Married	7.783	14.870	-2.310	3.155	0.388	8.019
	Others	0.000	0.000	0.000	0.000	0.000	0.000
Educational status	Illiterate	9.999	-16.049	32.331	19.322	6.861	9.074
	Ability to read and write	-0.427	-6.932	13.833	-0.627	-2.020	-1.980
	High school and Diploma	-0.373	18.720	-14.491	-0.828	-2.590	5.603
	Academic education	0.000	0.000	0.000	0.000	0.000	0.000
	Sum	9.199	-4.261	31.673	17.867	2.251	12.697
Economic status	Poorest	76.059	38.859	48.320	66.253	23.278	58.773
	Poor	16.605	31.389	5.949	16.936	27.082	21.898
	Middle	-0.169	-0.002	-0.070	-0.155	25.545	-0.108
	Rich	-15.394	-18.142	-0.012	-17.688	-0.423	-11.450
	Richest	0.000	0.000	0.000	0.000	0.000	0.000
	Sum	77.101	52.104	54.187	65.346	75.482	69.113
Ethnicity	Turk	-1.352	0.996	-0.330	-0.930	-0.668	-1.114
	Fars	-2.612	-6.053	4.417	2.378	3.627	-1.548
	Others	0.000	0.000	0.000	0.000	0.000	0.000
	Sum	-3.964	-5.057	4.087	1.448	2.959	-2.662
Retirement	Retirement (social security)	-0.206	-0.652	-1.119	-0.882	0.058	-0.364
	Retirement (governance)	1.972	-1.484	2.392	1.882	0.013	-0.337
	Retirement (private)	0.439	-1.049	-0.189	0.495	0.326	0.908
	Retirement (others)	-1.038	0.924	1.517	-0.895	-1.183	-0.936
	Non covered	0.000	0.000	0.000	0.000	0.000	0.000
	Sum	1.167	-2.261	2.601	1.495	-0.786	-0.729
Job	Part-time worker	10.077	13.417	4.011	6.936	12.335	8.601
	Full- time worker	7.301	1.807	8.707	6.962	8.241	4.268
	Office job	-6.617	-1.922	0.615	-3.870	-5.758	-3.286
	Employer	0.000	0.000	0.000	0.000	0.000	0.000
	Sum	10.761	13.302	13.333	10.028	14.818	9.583

a. Indicates the percent of contribution to CI values.

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the economic status, if we take the "richest" quintile as the reference, a notable contribution of the economy can be seen in the SC and all SC dimensions. The contribution of the economy to the CI (social capital inequality) decreases when moving from the "poorest" toward the "rich" quintile. Among the dimensions, the contribution to the "social network" remained high at around 25 in the poorest, poor, and middle quintiles, but that dropped to zero in the rich and the richestquintiles. Similarly, "social coherence" and "voluntary help" were the first and the second categories of the social capital affected highly by the "poorest" quintile, at 76 and 66, respectively. This share to the CI declined dramatically when reaching the middle group and shifted toward -15 and -17, respectively, in the rich group.

In terms of ethnicity, the contribution of the Turk and the Farswas-1.11 and -1.55, respectively. The contribution of the Turk to the CI was within a negative range for all dimensions except for "collective activity" with a positive contribution of 0.99 from the Turk. The lowest amount of the contribution was for the "social coherence" at -1.53. The contribution of the "Fars" was mainly positive for all the dimensions of the social capital, except for "collective activity" and "social coherence," with the percentage contribution of -6.05 and -2.16, respectively.

Compared with the nonretirement group, those within the "private" showed a positive share to the CI (up to 0.90) in the social capital inequality, whereas other groups exhibited a negative contribution (-0.9 at most). "Voluntary help" and "social coherence" were the dimensions affected positively by the "private (+0.4)," which were much lower than the contribution of "governance" (at about +1.9).

Finally, taking "employer" as the reference, "seasonal worker" showed the highest contribution to the CI and social capital inequality (+8.6). This can be seen in all dimensions. Next was the "worker" with contribution half the amount of that for the "seasonal worker" (+4.02). The percentage contribution of "season worker" to the CI of "collective activity", "social network", and "social coherence" all positioned above +10. Unlike "worker" and "seasonal worker," the contribution of the "employed" was mostly negative to the social capital and all dimensions of the social capital. The exception was the "reciprocity" dimension which was affected negatively by the "employed" dimension (+0.6).

Discussion

There was a different level of inequality in the distribution of the SC among the senior citizens, which was found to be primarily related to their different economic statuses. Moreover, the sociodemographic facets of the society had some influences on the level of SC inequality.

SC was found to be more accumulated in the "rich" group. In other words, more share of social capital was found among the wealthy class of the elderlies (62, 63). The same finding was found in the study of Shadi et al (2018), evaluating the distribution of the SC in people older than18 years, in which the SC and its dimensions were more concentrated in the rich than in the poor.

All dimensions of the SC were also found more in the rich elderly class, except "reciprocity," which was found more in the "poor." Why the poor took more share of "reciprocity" is a question that merits investigation as we found no information regarding the relationship between the distribution of wealth and of reciprocity. Considering other dimensions, the result made sense as other studies indicate that "social network," "social coherence," and "collective activity" are higher in the rich. The rich people are more active in social relationships, are more willing to support their communities, and engage in teamwork.

As the age increased in the elderly population, so did the inequality in the "collective activity," while the social capital inequality was generally reduced. Our results showed a higher SC inequality in the 60-75 age range compared with the >75 age group. Similar age-related health problems might explain such a decrease in social capital inequality among older people. Above the age of 75, it seems that the rich suffer to the same extent as the poor from age-related health problems and incapacitating illnesses (64). The health issues severely limit the social interaction aspect of the senior citizens' life (65, 66), perhaps regardless of their economic status. However, in the 60-75age group, it seems that the rich class manages to restrict the progression of these incapacitating diseases better (67, 68). Considering the collective activity dimension, however, the increase in age was accompanied by the increase in inequality, which can be attributed to the pivotal role of economic welfare in person to person interactions.

There was an increase in the social capital inequality in women and married citizens than men and the unmarried, indicating the high dependence of senior female and old unmarried citizens on the household economy to expand their healthy relationship and social interactions (69).

Illiteracy was associated with a large unequal distribution of the SC among the senior members of the society, while a minor improvement in the education status of the elderly population (shifting from illiteracy to the ability to read and write) brought about a dramatic fall in the SC inequality. The deprivation of the illiterate elderlies from the social capital stresses the importance of education in social capital development. Illiteracy is highly prevalent among the poor class of the society whose social interaction is limited to intragroup relationships (70). In this regard, literacy and education seem to offer an expansion of social networks beyond the groups.

The SC varied between different ethnic groups as their economic status did. In our study, there was a higher social capital inequality in the Fars and Turk communities than others in terms of "social coherence," denoting a close relation of this dimension with ethnicity.

The retirement period of life is also accompanied by reduced social interactions associated with SC inequality among senior groups (71, 72). There was a negligible SC bias among the people under different retirement pension plan coverages in the current study. This could be explained by the ineffective pension coverage system in Iran, in which more than half of the senior citizens were not under any retirement pension plan.

In addition to the retirement life, the early work experi-

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ence explained the SC inequality among the elderly. Seasonal workers and office workers (employees and employers) had a high and low SC inequality level, respectively. Such a high inequality can be explained by the senior economic status, where the seasonal workers mainly belong to the poor class. The other groups had a noticeably higher income.

Limitations

The study suffered from a few limitations that could have been avoided. First, 37% of the elderlies consented to participate in the study, thus, the findings were only in part representative of the elderly population. in Tehran. Second, the primary PCA component used in the study explained 58% of the distribution of the wealth in the population. In other words, based on the items chosen, 42% of the variance could not be explained. This could have been enhanced by introducing new items in the SESQ, including the elderlies' financial audits. Third, we drew a line between the high and low level of the SC using the median of the population's social capital score as the cutoff point. Perhaps a standard cutoff point might be different from the median chosen to define the low and high level of social capital. Nevertheless, the median social capital score helped us measure the inequality in the population's SC. Finally, we could not explain the inequality in the SC and dimensions thereof; however, it is still worth investigating. To sum up, the current study showed us the level of relationships between different factors of sociodemographic, economic, and social capital dimensions.

Conclusion

The SC distribution varied in different quintiles of the economic status in almost all different sociodemographic strata. This indicated a strong relationship between socioeconomic status and the distribution of SC in the elderly. Economic status was the primary factor explaining SC inequality, followed by education and job status. Since these factors can be modified in the communities, rightful initiatives and decisions should be taken toward bridging the gap between the social relationship among the citizens by the improvement of the education system and business life in our society.

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Ethical Approval

This project is a part of the Ph.D thesis of Seyyed Hamid Nabavi, with the grant number 932505004. The data gathered upon informed consent of the participants by Tehran University of Medical Sciences, Tehran, Iran, and approved by the sponsor and the Ethical Committee of the Social Welfare and Rehabilitation Sciences (IR.USWR.REC.1397.175) with respect to scientific content, compliance with applicable research, and human subjects regulations.

Conflict of Interests

The authors declare that they have no competing interests.

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