

Impact of social capital, gender and education on the utilization of public health services: A Cross sectional study based on the China Migrant Dynamic Survey

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Research

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Abstract

Background: China is making every effort to promote equal access to public health services(PHS) for the internal migrants. Studies have demonstrated that the impact of social capital on PHS is different among subgroups of people. Clarifying these differences will help China accurately promote the equalization of PHS for the internal migrants and provide reference for other developing countries.

Methods: Data from the China Migrant Dynamic Survey of 2017, involving 130642 migrants in 31 provinces were used to clarify the complex relationship between social capital and the utilization of National Essential Public Health Services (NEPHS). Social capital was divided into regional cognitive social capital (RCSC), regional structural social capital (RSSC), individual cognitive social capital (ICSC), and individual structural social capital (ISSC). Then, multi-level logistic regression was conducted to analyze their impacts on the utilization of NEPHS of the migrants, and whether such effects are moderated by gender and education.

Results: The results suggest: (1) There are significant differences in the levels of CSC, SSC, and NEPHS utilization between different genders and educational subgroups of the migrants, among which the educational difference is more prominent. (2) An interaction exists between the levels and dimensions of social capital and NEPHS projects. Also, the impact of SSC on NEPHS is always greater than that of CSC at the same level. (3) The effects of RCSC, RSSC, ICSC, and ISSC on NEPHS utilization by migrants are not moderated by gender. However, education could weaken the relationship between RCSC and health education, ISSC and health education, and RSSC and health records but strengthen the correlation between RSSC and health education.

Conclusion: This study demonstrated complex interactions between the dimensions and levels of social capital, NEPHS projects, and the population characteristics of migrants. As the government strives towards the equalization of NEPHS, these interactions should be fully considered.

Background

China is undergoing unprecedented social change. An increasing number of people leave their original places of residence to work and live in other provinces or cities to improve their lives. Such people are called internal migrants. According to the National Health Commission, the Chinese migrant population exceeded 240 million in 2017 [1]. In 2009, China initiated the National Essential Public Health Services (NEPHS) project[2]. However, due to the lagging household registration management system and the nature of the internal migrants, the migrants is at a disadvantage in accessing the NEPHS in the new environment[3, 4]. In 2013, the central government reintroduced measures to promote the NEPHS equalization of internal migrants, and since then, NEPHS deployment level has risen rapidly[5, 6]. However, there is still a significant gap in the national planning target[3, 4, 7]. Thus, evaluation of the factors affecting the continuous improvement of the NEPHS utilization by internal migrants and their mechanism of action has become a significant concern that needs immediate resolution.

Migration means a loss of the original social network and a disruption in civic participation in the new environment, particularly if migrants view the move as temporary and have little stake or familiarity in the destination community[8], which results in the deficiency of the localized social capital of the migrants. Social capital refers to the resources and benefits received through connections with others, either as individuals or groups[9]. Social capital can significantly influence the accessibility of public health services [10], and its primary action paths are as follows: (1) promoting the sharing of information among neighbors; (2) changing health behaviors, attitudes, and concepts through interaction with peers [11–13]. In some developed countries, the lack of social capital is reported to significantly limit the effective utilization of local health services by migrant populations[11, 12]. However, due to the interdependence of cultural,

economic, and social capital[14], the relationship between social capital and health is not consistent across countries[15, 16]. Notably, the social capital of Chinese people has unique characteristics, with a higher level of trust and a lower level of social participation[17]. The association between social capital and health also presents substantial uniqueness in China[18, 19]. Therefore, it is necessary to continually explore the correlation between social capital and health in the migrant population.

Compared with the local population, the social capital of migrants in the destination areas also shows a considerable deficit [17, 20] and is associated with various adverse health outcomes [21–27]. However, these previous studies focused more on the health outcomes and neglected the process by which migrants access NEPHS in their destination regions. The study by Hou et al.[28] was an exception, they confirmed the positive effect of individual structural social capital on the health education acceptance and health record establishment of the migrant population. There are currently at least three unclear dimensions on the relationship between social capital and NEPHS utilization among the Chinese migrant population that need further exploration: (1) The influence of different dimensions of individual social capital, both cognitive and structural, on the health outcomes[9]. Although the effect of the latter (structural social capital) on NEPHS utilization has been verified[28], the effect of the former is unclear. (2) The effects of different levels of social capital, both individual and contextual, on the health outcomes[9]. Most studies[27, 28] on the relationship between social capital and NEPHS utilization by migrant populations were conducted at the individual level, and the discussion was deficient at the contextual level. (3) Differences in the application of social capital and NEPHS by the different migrant population subgroups. Not everyone has access to the same sources of social capital and not everyone will benefit in the same way[29]. The differences in the relationship between social capital and health among different subgroups have attracted increased research attention and could constitute the future focus of social capital[30]. The differences in this relationship between different subgroups of the Chinese migrant population also need to be explored.

In the context of China, a huge developing country, this study takes the internal migrants as the respondents to answer three questions: (1) What are the distribution characteristics of individual social capital and NEPHS utilization level among migrant population subgroups with different gender and education levels? (2) How do different dimensions (cognition and structure) and different levels (individual and contextual) of social capital affect the utilization of NEPHS? (3) Do gender and education significantly moderate the relationship between social capital and migrant population NEPHS utilization? The answers to three questions will help us understand the mechanism of social capital on the NEPHS utilization by internal migrants. This will not only help the Chinese government to better promote relevant work, but also provide a meaningful reference for other countries, especially developing countries, to promote the equalization of public health services for the migrant population.

Methods

Data

The data was obtained from the China Migrant Dynamic Survey (CMDS) in 2017 and was provided by the Migrant Population Service Center. CMDS is an annual national sample survey of the internal migrants organized by the NHC, with an annual sample size of approximately 200,000 households. The survey adopts the layered, multi-stage, and proportional to scale PPS (Probability proportional to size) sampling method. This study adopted the individual questionnaire A, which was uniformly printed and distributed by the NHC. The questionnaire includes basic information about the subject's demography, perception of the destination, the state of social interaction, and utilization status of NEPHS, etc. Full-time investigators collected the questionnaire data through household interviews, and each respondent gave informed consent before commencing the interview. Dates were entered through the migrant

population health and family planning dynamic monitoring system and were checked by the investigators and the investigation instructors. The respondents consisted of internal migrants aged 15–59 living in the destination for more than one month. In this study, the inclusion conditions were set as "22–59 years of age, residence duration more than one year, and 1–16 years of education. Finally, 130642 people were included in the survey.

Measurement

Dependent variables

Health education and health records, the two primary services of NEPHS, were selected as outcome variables. The health education question was "have you received the following health education in your current community in the past year: occupational disease prevention and control, tuberculosis prevention and control, chronic disease prevention and control, STD and AIDS prevention and control, tobacco control, reproductive health and contraception, maternal and child health care, healthy birth and childbearing, self-help education in public emergencies, and mental health education". Individuals who had not received any of the above education categories were marked as "No", while those who had received one or more of the education categories were marked as "Yes". The health record question was "have you ever set up a health record at the destination?" and the answer was "yes or no."

Independent variables

Social Capital refers to the social network resources that can be utilized by individuals within the scope of their current residence. It can be distinguished into Cognitive Social Capital (CSC) and Structural Social Capital (SSC). CSC generally refers to individuals' perceptions, beliefs, and attitudes toward their social surroundings, with corresponding measures focused mainly on the concepts of generalized and particularized trust [31]. The latter was selected in this study, mainly referring to the overall perception of migrants to the destination. There were four questions in the survey: "I like the city/place I live now", "I am concerned about the changes in the city/place I live now", "I am very willing to blend with the local people and become a part of them", "I think the local people are willing to accept me as a part of them", each question was graded as "totally disagree", "disagree", "basically agree", or "totally agree", $\alpha = 0.844$. According to the distribution of scores, CSC was divided into four levels: level 1 (4–11), level 2 (12), level 3 (13–15), and level 4 (16).

SSC refers to the presence of formal opportunity structures or activities in which individuals build or strengthen their social connections. These structures and activities are often operationalized through measures of an individual's civic or social participation [32]. The SSC of this survey included civic participation and social participation. The civic participation questions were: "since 2016, have you made suggestions to your unit/community/village or supervised the unit/community/village affairs management", "since 2016, have you participated in property donation, blood donation, volunteer activities, etc.", "since 2016, have you reported the situation/put forward policy suggestions to relevant government departments in various ways", "since 2016, have you posted online comments on national affairs and social events or participated in related discussions", "since 2016, have you participated in party/youth league organization activities and party branch meetings". There were four-level answers for each question: no, occasionally, sometimes, and often. The social participation question was "have you participated in any of the following activities in the past year: trade unions, volunteer associations, homecoming associations, fellow-students association, others". According to the distribution characteristics of scores, civic participation was integrated into two categories: "none" or "at least one". Social participation was also treated according to this method. According to statistical evaluation, there was a significant correlation between civic participation and social participation ($r = 0.304$, $p = 0.000$). Therefore, the sum of the two was determined as the SSC level, and the three levels were evaluated as either 0, 1, or 2.

In developing countries, gender and education are often indicators of socioeconomic status (SES), and SES can significantly influence social capital and health [29]. Gender and education were set as moderating variables. According to the compulsory education years in China, education were divided into two categories: ≤ 9 and > 9 years groups. Several factors, including age, residence duration, migratory range, and community type, have been confirmed to affect the NEPHS utilization of migrant populations in previous studies [3–7]. Thus, the above variables were set as the control variable. The age groups were divided into 22–27, 28–37, 38–47, and 48–59 years old, while the residence time groups were divided into 1–3, 4–6, 7–9, 10–12, and above 12 years. The community types were divided into urban and rural areas, while the migratory range was divided into across provinces, across cities within a province, and across counties within a city.

Statistical analysis

SPSS 22.0 was used for data analysis. First, the descriptive statistics of the included variables were calculated (Table 1). Then, we compared the differences in social capital, health education, and health records among the different gender and education groups of migrants by cross-table and chi-square tests (Table 2). Our data-set contained a sample of 130642 individuals nested within 31 provincial administrative units. We calculated the CSC and SSC average grades of the samples from 31 provincial administrative regions, respectively, as the regional cognitive social capital (RCSC) and regional structural social capital (RSSC) of each region. Then, to distinguish the impact of social capital at different levels on NEPHS, we specified the following basic model:

$$H_{ij} = \beta_0 + \beta_1(S_{ij} - S_j) + \beta_2 S_j + \beta_3 X_{ij} + \mu_j + \varepsilon_{ij}$$

where H is the relevant dependent variable for an individual i (level 1) in province j (level 2), S is the set of social capital variables measured at the individual and province levels, X is a vector of standard socioeconomic-demographic variables (log of gender, education, age, residence duration, community type, and migration range). The β 's are the fixed parameters to be estimated, μ_j is the province-specific random effect, whereas ε_{ij} is the random component of the error term. Therefore, $(S_{ij} - S_j)$ refers to the pure personal social capital, which can be divided into individual cognitive social capital (ICSC) and individual structural social capital (ISSC). Thus, the social capital of the migrant population was disassembled into RCSC, RSSC, ICSC, and ISSC. Finally, we added the interaction terms of RCSC, RSSC, ICSC, and ISSC with gender and education into the model to analyze the moderating effect of gender and education on the correlation between social capital, health education, and health records (Table 3, 4, 5).

Results

Descriptive Statistics

Table 1 shows that 52.4% of the migrant population were male; 60.1% had no more than nine years of education. Further, 61.6% of the population were under the age of 37 years, 53.7% had lived in the destination for less than six years, 74.5% lived in cities, and nearly half (48.6%) had moved across provinces. The CSC of the migrant population was high while the SSC was low. Meanwhile, 91.0% of the migrants had a positive evaluation of the destination, but 37.9% did not participate in any community activities in the previous year. The acceptance rate of health education among the migrants (74.2%) was significantly higher than the establishment rate of health records (30.4%).

Table 1
Respondent's Socio-demographic Characteristics in 2017, China(N = 130642)

Variables	Subgroups	N	%	Variables	Subgroups	N	%
Gender	Male	68510	52.4	Migration range	Across provinces	63521	48.6
	Female	62132	47.6		Across cities within the province	43512	33.3
Education	≤ 9 years	78491	60.1		Across counties within a city	23609	18.1
	> 9 years	52151	39.9	CSC	Level 1	11778	9.0
Age (years)	22–27	28348	21.7		Level 2	48024	36.8
	28–37	51446	39.4		Level 3	36882	28.2
	38–47	35711	27.3		Level 4	33958	26.0
	47–59	15137	11.6	SSC	Level 1	49554	37.9
Residence duration (years)	1–3	36034	27.6		Level 2	45051	34.5
	4–6	34056	26.1		Level 3	36037	27.6
	7–9	23162	17.7	Health education	No	33711	25.8
	10–12	13968	10.7		Yes	96931	74.2
	> 12	23422	17.9	Health records	No	90927	69.6
Community type	Urban	97276	74.5		Yes	39715	30.4
	Rural	33366	25.5				

Comparison of social capital and NEPHS utilization among different subgroups

According to Table 2, the CSC level of males was lower than that of females, while the SSC level of males was stronger than that of females. The proportion of males receiving health education was significantly lower than that of females, and the proportion of males who established health records was also significantly lower than that of females. Migrants with higher years of education had higher levels of CSC and SSC, and also had higher rates of health education and health records. In summary, the gender differences in the social capital, health education, and health records of migrant populations were significantly smaller than their differences in education years.

Table 2

A cross-table showing the effect of gender and education on social capital and NEPHS utilization.

Variables	Subgroups	Gender differences			Education differences		
		Male	Female	χ^2	1–9 years	10–16 years	χ^2
CSC	Level 1	9.2	8.8	13.847**	10.7	6.5	1006.563***
	Level 2	36.9	36.6		37.7	35.4	
	Level 3	27.9	28.6		27.8	28.8	
	Level 4	26.0	26.0		23.8	29.3	
SSC	Level 1	35.0	41.2	700.850***	35436	27.1	6677.397***
	Level 2	34.7	34.2		27265	34.1	
	Level 3	30.2	24.6		15790	38.8	
Health Education	No	26.9	24.6	93.718***	27.5	23.3	288.741***
	Yes	73.1	75.4		72.5	76.7	
Health Record	No	70.9	68.1	119.316***	70.8	67.8	136.467***
	Yes	29.1	31.9		29.2	32.2	
Note: ***p < 0.001, **p < 0.01, *p < 0.05.							

Table 3

Logistic regression results of gender, education, and control variables on health education and health records.

Independent Variables	Reference group	Baseline model of health education			Baseline model of health records		
		OR	95% CI		OR	95% CI	
Gender Male	Female	0.910***	0.887	0.933	0.888***	0.867	0.909
Education >9 years	≤ 9 years	1.130***	1.099	1.162	1.103***	1.075	1.131
Age (years) 28–37	22–27 years	1.166***	1.127	1.207	1.071***	1.037	1.106
38–47		1.069**	1.028	1.111	1.091***	1.051	1.132
47–59		0.794***	0.758	0.832	1.036	0.989	1.085
Residence duration 4–6 years	1–3 years	1.061**	1.025	1.099	1.093***	1.058	1.129
7–9 years		1.017	0.978	1.057	1.069***	1.031	1.109
10–12 years		0.931***	0.890	0.974	1.026	0.982	1.072
> 12 years		0.898***	0.864	0.934	0.973	0.936	1.010
Community type Urban	Rural	1.276***	1.241	1.313	1.215***	1.181	1.250
Migration range	Across provinces	1.416***	1.376	1.457	1.484***	1.445	1.525
Across cities within province							
Across counties within a city		1.388***	1.340	1.438	1.568***	1.519	1.620
Cox & Snell R ²		0.015			0.014		
Note: ***p < 0.001, **p < 0.01, *p < 0.05.							

Effects Of Social Capital On Nephs Utilization

The results in Table 3 show the binary logistics regression analysis conducted using age, residence duration, migratory range, community type, gender, and education as independent variables, and health education and health record as the dependent variables. All control variables had a significant impact on health education and health records. The results also show that gender and education had a significant impact on NEPHS utilization and that women and highly educated migrants were more likely to access NEPHS.

After the introduction of CSC and SSC, the R² of the health education Model 1a (Table 4) was significantly improved compared with that of the baseline model. After social capital was disintegrated from RCSC, RSSC, ICSC, and ISSC, the R² of Model 2a was further significantly increased. However, the introduction of interaction terms did not increase the R² of Model 3a significantly. In Model 3a, the OR value of RCSC was not significant; the OR values of RSSC, ICSC, and ISSC were all significantly greater than 1, the interaction terms of gender and RCSC, RSSC, ICSC, and ISSC were not significant. In the interaction terms of education and social capital, the OR value of education*RSSC was significantly greater than 1, while education*RCSC and education*ISSC were significantly less than 1.

Table 4
Logistic regression results of social capital on health education.

Independent Variables	Model 1a			Model 2a			Model 3a		
	OR	95% CI		OR	95% CI		OR	95% CI	
Gender	0.826***	0.805	0.848	0.830***	0.808	0.852	1.219	0.865	1.717
Education	0.886***	0.860	0.911	0.868***	0.843	0.894	1.463*	1.019	2.101
CSC	1.157***	1.141	1.171						
SSC	2.072***	2.035	2.109						
RCSC				0.834***	0.782	0.890	0.981	0.883	1.091
RSSC				30.809***	27.825	34.114	29.245***	24.737	34.573
ICSC				1.167***	1.151	1.184	1.190***	1.162	1.218
ISSC				1.961***	1.926	1.997	1.987***	1.917	2.042
Gender*RCSC							0.899	0.791	1.021
Gender*RSSC							0.894	0.729	1.096
Gender*ICSC							0.983	0.956	1.012
Gender*ISSC							1.016	0.980	1.053
Education*RCSC							0.742***	0.649	0.848
Education*RSSC							1.382***	1.118	1.710
Education*ICSC							0.972	0.944	1.001
Education*ISSC							0.961*	0.927	0.997
Cox & Snell R ²	0.072			0.092			0.093		
Note: the regression results controlled all variables in three models as presented in Table 3. ***p < 0.001, **p < 0.01, *p < 0.05.									

As shown in Table 5, introducing CSC and SSC significantly improved the Model 1b of health file compared with the R² of the baseline model. After the introduction of RCSC, RSSC, ICSC, and ISSC, the R² of Model 2b increased again, whereas introducing the interaction terms did not increase the R² of Model 3b significantly. In Model 3b, the OR values of RCSC, RSSC, ICSC, and ISSC were all significantly greater than 1, and the interaction terms of gender, education and RCSC, RSSC, ICSC, ISSC were only education *RCSC significant and less than 1.

Combining the results shown in Tables 4 and 5, we found that: to compare the effects of different independent variables on the same dependent variable, the RCSC is smaller than the RSSC, and the ICSC is smaller than that of ISSC. Comparing the effects of the same independent variable on different dependent variables, the effects of RCSC and ICSC on health records were larger. In contrast, the effects of RSSC and ISSC on health education were larger. In conclusion, a complex dependency relationship between social capital dimensions, levels, and NEPHS was observed. The relationship between the different dimensions was moderated by education, not gender.

Table 5
Logistic regression results of social capital on health records

Independent Variables	Model 1b		Model 2b			Model 3b			
	OR	95% CI		OR	95% CI		OR	95% CI	
Gender	0.845***	0.825	0.866	0.851	0.831***	0.873	0.875	0.619	1.235
Education	0.945***	0.920	0.970	0.932	0.908***	0.958	2.149***	1.507	3.064
CSC	1.231***	1.215	1.247						
SSC	1.457***	1.434	1.480						
RCSC				1.640***	1.542	1.744	1.877***	1.698	2.074
RSSC				9.705***	8.820	10.679	9.464***	8.101	11.056
ICSC				1.214***	1.197	1.230	1.223***	1.197	1.250
ISSC				1.398***	1.376	1.420	1.386***	1.350	1.423
Gender*RCSC							0.948	0.840	1.070
Gender*RSSC							1.137	0.940	1.375
Gender*ICSC							0.996	0.970	1.023
Gender*ISSC							1.009	0.979	1.041
Education*RCSC							0.764***	0.675	0.864
Education*RSSC							0.897	0.738	1.091
Education*ICSC							0.985	0.958	1.012
Education*ISSC							1.009	0.977	1.041
Cox & Snell R ²	0.041			0.054			0.054		
Note: the regression results controlled all variables in three models as presented in Table 3. ***p < 0.001, **p < 0.01, *p < 0.05.									

Discussion

There were three main findings. (1) There are significant differences in the levels of CSC, SSC, and NEPHS utilization between different genders and educational subgroups of the migrants, among which differences in education years are more prominent. (2) An Interaction exists between the levels and dimensions of social capital and NEPHS projects; the effect of SSC on the NEPHS is always greater than that of CSC at the same level. (3) The effects of RCSC, RSSC, ICSC, and ISSC on NEPHS utilization of migrants are not moderated by gender. However, education could weaken the relationship between RCSC and health education, strengthen the link between RSSC and health education, weaken the relationship between ISSC and health education, and also weaken the association between RSSC and health records.

As some studies have pointed out, the social capital of China's migrant population is insufficient[17, 20]. However, according to the data in this study, this deficiency may only exist in SSC, and the level of CSC of the Chinese migrant population is still high. Lack of economic and cultural capital bars societal subgroups from acquiring and using social capital[14]. People with high SES have advantages in the acquisition of social capital[29], which is also true for

Chinese migrants [24, 33], a fact also confirmed in this study from the gap of social capital in education. A Canadian survey found that men's CSC was lower while the SSC was higher than that of women[30]. In China, a survey of migrants in Wuhan, Hubei province, did not find gender differences in social capital [24]. Another survey in Shaoxing, Zhejiang province, also found no significant gender difference in social trust and social participation[33]. The sample and different operational definition of social capital could account for the inconsistency. CSC can be divided into generalized and particularized trust [31], the Canadian and Hubei studies used generalized trust, while the Zhejiang study investigated particularized trust (trust to local people). For SSC, it is difficult to compare different studies due to the large differences in the included contents. The concept of CSC and SSC in this study is more similar to that in the Zhejiang, we found that the differences of gender in CSC and SSC, while statistically significant, were small. which needs to be verified in future studies under a unified concept. As for the gender and education differences in health education and health records, the conclusions of this study are similar to previous studies[3, 5, 6, 34, 35].

Poortinga[15] analysed data from 22 European countries and concluded that individual-level rather than context-level (states) social capital is associated with self-rated health. A similar study in rural China found that CSC, at both individual and contextual (village) levels, is positively correlated with health. Meanwhile, SSC has very low statistical association at both levels [18]. These two studies [15, 18] concur on the ICSC, similar to this study. This study demonstrated that ISSC is positively related to NEPHS, which is also consistent with similar studies [28]. According to Palmer et al.[17], the overall level of social participation in rural China is considerably low, which attributed to the flooring effect[18]. Of note, the bulk of the migrant population is farmers, most of who live in cities, and the social participation of cities is higher than that of rural areas[17]. Awareness is a prerequisite to NEPHS access, and lack of awareness is the main obstacle hindering the utilization of NEPHS by migrant population[36]. Besides, the information function of SSC makes service acquisition a more useful resource for NEPHS. It is worth noting that in this study, RSSC is the most prominent factor affecting the NEPHS, and the effect of RCSC on NEPHS is more complicated. As a government project, NEPHS are more affected by government input. Zhang et al. [6] reported that investment to the NEPHS varies among different regions of China. Therefore, social capital at contextual (provinces) level may have a more significant impact on NEPHS. The relationship between RSSC and NEPHS reflected this correlation, but RCSC only had a significant impact on health records. The mechanism of action of RSSC and RCSC on NEPHS is very different, which needs further evaluation in future research.

Studies based on the western background reveal gender differences in the relationship between social capital and health outcomes[31, 37–39]. However, this study did not observe any gender difference, which could be attributed to the uniqueness of the Chinese social capital but needs further investigation. Uphoff et al. [29] proposed three paths by which SES could affect the relationship between social capital and health outcomes. (1) A more significant social capital benefit on the health of disadvantaged persons in the society, and no effects or limited health benefits for those in positions higher up in the social ladder. (2) People with a low SES will generally have less social capital, and the capital available to them cannot be used effectively for health benefits. (3) Social capital might benefit the better-off in society while excluding people with a lower SES or a minority position. This study found that the relationship between education, RCSC, ISSC, and health education conformed to path 1, while the relationship between education, RSSC, and health education conformed to path 2. In particular, this study found that the relationship between education, RCSC, and health records did not correspond to either path and appeared as an aggressive version of path 1. We can speculate that the dimensions and levels of social capital, education, and the types of NEPHS projects jointly affect the utilization level of NEPHS by the migrants in the destination.

Two problems need to be pointed out. Firstly, this study simplifies health education by merging the nine health education items into one and dualizing the options for “yes or no”. This evaluation criterion is based on the premise that each province attaches equal importance to the nine health education items. In fact, different provinces have

different concerns about the health of the migrant population[40], which will affect their choice of health education content and the acceptance rate of the same health education program by the migrants also differs significantly among the provinces [6]. Although the simplified criterion is convenient for overall comparison, it may cause bias in results interpretation. Secondly, as mentioned by Palmer et al.[17], the social capital of Chinese people has its own characteristics, and the cultural difference is more prominent in structural social capital. In this study, the selection of several dimensions of structural social capital is based on the special cultural background of China, but these dimensions may not necessarily be applicable in other countries. Therefore, some conclusions of this study should be extended with caution.

Conclusions

The social capital of migrants in China and its relationship with NEPHS utilization have distinct national characteristics. The CSC of migrants is high while the SSC is low. Although there are significant gender and educational differences in social capital and the NEPHS utilization of migrants, their correlation is not moderated by gender. However, education can weaken the relationship between RCSC and health education, strengthen the relationship between RSSC and health education, weaken the relationship between ISSC and health education, and also weaken the relationship between RSSC and health records. These findings reveal complex interactions between the dimensions and levels of social capital, different NEPHS projects, and the population characteristics of migrants. As the government strives toward the equalization of NEPHS, our findings may provide useful references.

Abbreviations

AIDS
Acquired Immune Deficiency Syndrome
CSC
Cognitive Social Capital
SSC
Structural Social Capital
NEPHS
National Essential Public Health Services
ICSC
Individual Cognitive Social Capital
ISSC
Individual Structural Social Capital
PHS
Public Health Services
RCSC
Regional Cognitive Social Capital
RSSC
Regional Structural Social Capital
SES
Socioeconomic Status
STD
Sexually Transmitted Disease

Declarations

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No.

Availability of data and materials

Since the data used in this paper were provided by the Migrant Population Service Center, which is the top agency governing migrant population issues in China, we had to sign a legally binding agreement with the agency that we will not share any original data with any third parties. However, interested researchers can apply for access to the data at <http://www.ldrk.org.cn/>.

Authors' contributions

All authors participated in the design of the study. ZY carried out the statistical analysis and composed the first draft. CHJ gave opinions for modification. All authors read and approved the final manuscript.

Ethics approval and consent to participate

The “National Internal Migrant Dynamic Monitoring Survey, 2017” data is publicly available to authorized researchers who have been given permission by the Migrant Population Service Center, and written informed consents were obtained from all participants. The analysis of public access data was exempted by the local IRB; as this involved analyzing de-identified existing data, ethical approval was not required.

Consent for publication

Not applicable.

Competing interests

No competing interests in this study.

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