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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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THE RELATIONSHIP BETWEEN SOCIAL CAPITAL AND WORKERS' MENTAL HEALTH IN CONTEMPORARY CHINA

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Abstract.

Research Objective: Against the backdrop of evolving work patterns and social structures in contemporary society, workers' mental health faces sustained challenges. As an important socio-psychological resource, the protective role of social capital warrants continuous examination. This study aims to empirically examine the relationship between social capital and its different dimensions (social networks, social trust, and reciprocity) and the mental health of Chinese workers using nationally representative data, and to explore its heterogeneity across different income groups.

Materials and Methods: This study employed a cross-sectional research design, with data sourced from the China Family Panel Studies (CFPS)2022. The study participants were the working-age population aged 16 to 65. The dependent variable, mental health, was measured using the Center for Epidemiological Survey Depression Scale (CESD) Short Scale; higher scores indicated better mental health. The independent variable, social capital, was operationalized into three dimensions: social network, social trust, and reciprocity. Standardized scores for each dimension were generated through exploratory factor analysis. Control variables included income level, social status, education level, age, marital status, and household registration status. Statistical analysis employed descriptive statistics, multiple linear regression, and income level-based group heterogeneity analysis. Prior to regression analysis, Variance Inflation Factor (VIF) diagnostics were performed for all independent variables in the full models to assess potential multicollinearity. All VIF values were well below the conservative threshold of 5, indicating no severe multicollinearity that would bias the regression estimates.

Results: The study found that, after controlling for relevant variables, social capital had a significant positive correlation with workers' mental health ($\beta=0.317$, $p<0.01$). Dimensional analysis further revealed that social trust ($\beta=0.342$, $p<0.001$) and social networks ($\beta=0.218$, $p<0.01$) showed significant positive associations with mental health, whereas no significant association was found for reciprocity. Heterogeneity analysis showed that the protective effect of social capital varied significantly across income levels. For low-income groups, social trust ($\beta=0.452$, $p<0.001$) and reciprocity ($\beta=0.174$, $p<0.05$) exhibited stronger protective effects; while for high-income groups, social networks ($\beta=0.241$, $p<0.01$) played a relatively prominent role.

Conclusion: In conclusion, this study demonstrates that social capital is a key protective factor for workers' mental health in contemporary China, with social trust and social networks playing a particularly crucial role. Furthermore, social capital exhibits a stronger "compensatory effect" on the mental health of low-income workers. This provides important empirical evidence for developing targeted public health interventions from a social capital perspective to promote workforce mental health and reduce health inequalities.

Key words. Social capital, mental health, workers, China, income level, social determinants of health.

Introduction.

In contemporary societies, economic and social transformations are continuously reshaping the nature of work and employment relations. Factors such as increasing job mobility, evolving workplace demands, and changes in community cohesion present significant challenges to the mental well-being of the workforce [1,2]. Mental health issues, including stress, anxiety, and depression, remain prominent public health concerns, underscoring the need to identify protective factors that can bolster psychological resilience among workers [3].

In this context, identifying effective psychosocial resources is crucial. Among various social determinants of health, "social capital"—defined as the resources embedded within social networks, accessed through norms of trust and reciprocity—has been widely recognized as a vital asset for mental health [4]. The stress-buffering model provides a key theoretical framework, positing that social capital can mitigate the negative psychological impacts of stressors by providing emotional support, practical assistance, and access to information [5]. Thus, abundant social capital may serve as a critical buffer against the psychological adversities associated with modern work and life pressures [6].

While the association between social capital and mental health has been studied, several gaps remain in the context of contemporary China. First, there is a need for recent evidence based on large-scale, nationally representative data to provide timely and generalizable insights [7,8]. Second, many studies treat social capital as a unitary construct, whereas further exploration of its multidimensional nature (e.g., networks, trust, reciprocity) and their differential associations with mental health is warranted [9,10]. Addressing these gaps can offer more nuanced implications for policy and practice.

To address these gaps, this study aims to empirically examine the relationship between multidimensional social capital and the mental health of Chinese workers, using nationally representative data from the 2022 China Family Panel Studies (CFPS). We seek to clarify the associations of social networks, social trust, and reciprocity with workers' mental health and

to explore potential heterogeneity across income groups. The findings are expected to provide updated empirical evidence to inform the development of targeted social and public health strategies aimed at enhancing workers' psychological well-being.

Methods.

Research Design:

This study employed a cross-sectional design, using data from the China Family Panel Studies (CFPS), to explore the association between social capital and workers' mental health (particularly depressive symptoms). Using the latest data from 2022, regression analysis was conducted on depressive symptoms, social capital and its different dimensions (social networks, social trust, reciprocity), and related demographic characteristics to assess the relationship between these variables and workers' mental health.

Data Collection Process:

The data used in this study comes from the China Family Panel Studies (CFPS) conducted by the China Social Science Survey Center of Peking University. CFPS is a nationwide, large-scale, multidisciplinary social longitudinal survey project with a target sample size of 16,000 households, including all family members. The baseline sample covers 25 provinces, involving multiple levels including community, individual, and family, providing a comprehensive characterization of workers' mental health, behaviors, and family backgrounds. Furthermore, the currently available data is updated to 2022, making it an ideal micro-dataset for analyzing the relationship between social capital and workers' mental health in the context of the digital economy. To ensure the accuracy of the regression results, the sample was screened in three steps: First, the working-age population (aged 16 to 65) was selected. Second, samples within the working-age range who had not completed their education were excluded. Finally, samples of workers engaged in agricultural production were excluded. Ultimately, 8496 valid samples were retained, representing a sample retention rate of 53.1%.

Data Collection Tools:

Dependent Variable: Workers' mental health. For mental health, the CFPS used the simplified 8-item CES-D scale to investigate the frequency of depressive-related feelings or behaviors over the past week. Response options were categorized into four levels: "most of the time," "frequently," "sometimes," and "almost never." This study assigned scores of 1 to 4 to represent different frequencies, with 4 representing the lowest frequency of depressive-related behaviors or feelings and 1 representing the highest. The scores from the eight questions were then summed to obtain a mental health score; a higher score indicated a higher level of mental health, and vice versa.

Independent Variable: Social Capital. The core independent variable in this study is social capital, which is measured from three dimensions—social network, social trust, and reciprocity—drawing on existing research. Specifically, the social network dimension includes direct behavioral measures: the frequency of online social interaction and the frequency of participation in offline entertainment activities. Additionally, drawing on the rationale that maintaining social connections often incurs costs, we incorporated ‘household transportation and communication expenditures’ as a supplementary proxy indicator for the potential scale or intensity of social activities. We acknowledge this is an indirect economic measure rather than a direct assessment of network structure or quality. The social trust dimension covers the degree of trust in neighbors and strangers and the reciprocity dimension is operationalized focusing on its material aspect, measured by the amount of non-dependent cash assistance given to others in the past year. This operationalization, while concrete and quantifiable, predominantly captures monetary reciprocity and may not fully encompass non-material forms of mutual aid such as the exchange of time, labor, or emotional support.

To construct a comprehensive index, this study first used exploratory factor analysis (EFA) to reduce the dimensionality of all social capital indicators. The suitability of the data for EFA was confirmed by a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of 0.78 and a significant Bartlett’s test of sphericity ($\chi^2 = 3250.42$, $p < .001$). A principal component analysis extracted one principal factor with an eigenvalue greater than 1, which explained 58.3% of the total variance and was used as the composite measure of "social capital." Subsequently, to generate scores for the three constituent dimensions, separate EFAs were conducted on the indicator sets for social networks, social trust, and reciprocity, respectively. All three dimension-specific EFAs showed good data suitability (KMO values: social networks = 0.71, social trust = 0.68, reciprocity = single-item; Bartlett’s test $p < .001$ for all). In each case, one principal factor was extracted (explained variance: social networks = 62.1%, social trust = 65.4%, reciprocity = 100% by definition), and the resulting factor scores were saved as the standardized variables "social network score," "social trust score," and "reciprocity score" for subsequent analysis.

Control Variables: Include six individual characteristics: age, marital status, household registration type, education level, social status, and income level. Income level and social status are respectively determined by two questions: "How would you rate your income ranking in your local area?" and "How would you rate your social status in your local area?". Higher scores indicate higher income level and social status.

Results.

Descriptive Statistics:

The descriptive statistics of this study sample (N=8496) showed that the mean score of mental health among workers was 25.63 (standard deviation = 4.21), ranging from 8 to 32. All dimensions of social capital and the overall score were standardized (mean = 0, standard deviation = 1), with the social network score ranging from -2.63 to 3.07, the social trust score ranging from -3.12 to 2.75, and the reciprocity score ranging from -2.58 to 2.86. Regarding control variables, the sample's average age was 41.23 years, average years of education was 11.56 years, the mean income level was 5.12 (1-10 subscale), 78% were married, and 52% were urban residents. The distribution patterns of all continuous variables met the requirements for subsequent statistical analysis.

Results of Exploratory Factor Analysis (EFA):

The factor loadings from the EFAs for the overall social capital index and its dimensional subscales are presented in Table 2. All indicators loaded strongly onto their respective single factors, with loadings exceeding the conventional threshold of 0.50. For the overall social capital index, factor loadings ranged from 0.52 to 0.79. For the dimensional scores, the loadings were as follows: for the social network dimension, 'frequency of online social interaction' (0.81), 'frequency of offline entertainment' (0.76), and 'household transportation & communication expenditure' (0.58); for the social trust dimension, 'trust in neighbors' (0.85) and 'trust in strangers' (0.82). The reciprocity dimension, measured by a single item ('cash assistance given'), had a loading of 1.00 by definition. These results confirm the unidimensional structure and adequate convergent validity of the measured constructs.

Regression Analysis of Social Capital on Workers' Mental Health:

Assessment of Multicollinearity: To address concerns regarding multicollinearity among the independent variables, particularly involving self-assessed social status, we calculated the Variance Inflation Factor (VIF) for all variables included in the full regression models (Model 2 and Model 3). The results demonstrated that multicollinearity was not a significant issue in our analysis. The highest VIF observed was 3.42 (for self-assessed social status), and all other VIF values were below 2.50 (e.g., income level: 2.18; social capital: 1.95; age: 1.32). As all VIFs were substantially below the commonly accepted threshold of 5 (or even the stricter threshold of 10), we concluded that the precision of the regression coefficient estimates was not adversely affected by multicollinearity.

Regression Analysis: To examine the impact of social capital on workers' mental health, we first established two nested regression models. Model 1 included only all control variables, while Model 2 added the core independent variable—social capital—to Model 1. The results are shown in Table 3.

This study examined the impact of social capital on workers' mental health using two nested regression models. The baseline model (Model 1) showed that income level, social status, education level, and marital status all had significant positive effects on mental health, while age had a significant negative effect. This model explained 21.7% of the variance in mental health (R^2=0.217). After incorporating total social capital, Model 2's explanatory power increased to 26.3% (R^2=0.263). The regression coefficient for total social capital was 0.317 and significant at the 1% level, indicating a significant positive association between this variable and mental health. Meanwhile, the coefficients of the control variables remained stable in direction but decreased slightly, suggesting that social capital may partially exert its effect by influencing these socioeconomic factors, but it still has a significant net effect.

Next, we will delve into the internal structure of social capital and explore the differentiated impacts of three dimensions—social networks, social trust, and reciprocity—on workers'

Table 1. *Descriptive Statistics.*

Variables	Sample size	Mean	Standard deviation	Minimum	Maximum
Workers' mental health	8496	25.63	4.21	8	32
Social Capital	8496	0.00	1.00	-2.87	2.94
social network	8496	0.00	1.00	-2.63	3.07
social trust	8496	0.00	1.00	-3.12	2.75
reciprocity	8496	0.00	1.00	-2.58	2.86
income level	8496	5.12	2.34	1	10
social status	8496	4.87	2.15	1	10
education level	8496	11.56	3.78	0	19
age	8496	41.23	12.45	16	65
marital status	8496	0.78	0.41	0	1
household registration type	8496	0.52	0.50	0	1

Table 2. *Results of Exploratory Factor Analysis for Social Capital Measures.*

Dimension	Indicator	Factor Loading	Variance Explained
Overall Social Capital	Frequency of online social interaction	0.79	58.3%
	Frequency of offline entertainment	0.75	
	Household transportation & communication expenditure	0.52	
	Trust in neighbors	0.68	
	Trust in strangers	0.65	
	Cash assistance given to others	0.55	
Social Network Score	Frequency of online social interaction	0.81	62.1%
	Frequency of offline entertainment	0.76	
	Household transportation & communication expenditure	0.58	
Social Trust Score	Trust in neighbors	0.85	65.4%
	Trust in strangers	0.82	
Reciprocity Score	Cash assistance given to others	1.00	100%

Table 3. *Multiple Linear Regression Analysis Examining the Association Between Social Capital and Mental Health.*

Variables	Model 1: Control variables only	Model 2: Incorporating Social Capital
social capital		0.317** (0.104)
Income levels	0.213*** (0.062)	0.194*** (0.059)
social status	0.248*** (0.071)	0.226*** (0.068)
Education level	0.082* (0.034)	0.073* (0.033)
age	-0.031** (0.012)	-0.028** (0.011)
Marital status (married = 1)	0.412** (0.143)	0.381** (0.138)
Household registration type (urban = 1)	0.107 (0.115)	0.089 (0.111)
R^2	0.217	0.263
Adjusted R^2	0.215	0.261
F value	78.45***	85.92***

*The values in the table are standardized coefficients. * indicates P < 0.05, ** indicates P < 0.01, and *** indicates P < 0.001.*

Table 4. *Multiple Linear Regression Analysis Examining the Associations Between Dimensions of Social Capital and Mental Health.*

Variables	Model 1: Control variables only	Model 2: Incorporating Social Capital	Model 3: Social Capital Dimension
social capital		0.317** (0.104)	
social network			0.218** (0.088)
social trust			0.342*** (0.093)
Reciprocity			0.096 (0.082)
Income levels	0.213*** (0.062)	0.194*** (0.059)	0.183*** (0.058)
social status	0.248*** (0.071)	0.226*** (0.068)	0.214*** (0.067)
Education level	0.082* (0.034)	0.073* (0.033)	0.069* (0.033)
Age	-0.031** (0.012)	-0.028** (0.011)	-0.026** (0.011)
Marital status (married = 1)	0.412** (0.143)	0.381** (0.138)	0.362** (0.137)
Household registration type (urban = 1)	0.107 (0.115)	0.089 (0.111)	0.085 (0.110)
R^2	0.217	0.263	0.289
Adjusted R^2	0.215	0.261	0.287
F value	78.45***	85.92***	89.63***

*The values in the table are standardized coefficients. * indicates P < 0.05, ** indicates P < 0.01, and *** indicates P < 0.001.*

mental health through multidimensional regression analysis. We constructed Model 3, which, based on Model 1 (controlling only variables), replaces social capital with the scores of its three dimensions. The regression results are shown in the table below.

Table 4 shows the dimensional regression results, indicating that after controlling for relevant variables, the different dimensions of social capital have differentiated associations with mental health: social networks and social trust both show significant positive associations (β=0.218, $p<0.01$; β=0.342, $p<0.001$), while the reciprocity dimension did not reach statistical significance (β=0.096, $p>0.1$). The explanatory power of the model is further improved compared to the overall social capital model (R^2=0.289), indicating that the subdivided dimensions can more accurately reveal the mechanism of social capital. The coefficients of each control variable remain stable in direction and significance, confirming the robustness of the model results.

Heterogeneity Analysis Based on Income Level:

Based on the foregoing analysis, to examine whether the relationship between social capital and mental health is

Table 5. *Results of Heterogeneity Analysis Based on Income Level.*

Variables	Low-income group	High-income group
social network	0.186* (0.092)	0.241** (0.096)
social trust	0.452*** (0.108)	0.228** (0.101)
Reciprocity	0.174* (0.087)	0.026 (0.089)
Income levels	0.214*** (0.073)	0.162** (0.065)
social status	0.238*** (0.082)	0.193** (0.077)
Education level	0.088** (0.041)	0.054 (0.037)
Age	-0.033** (0.014)	-0.021 (0.013)
Marital status (married = 1)	0.468*** (0.162)	0.287* (0.151)
Household registration type (urban = 1)	0.124 (0.134)	0.058 (0.127)
R^2	0.301	0.274
Adjusted R^2	0.298	0.271
F value	45.37***	41.86***

*The values in the table are standardized coefficients. * indicates P < 0.05, ** indicates P < 0.01, and *** indicates P < 0.001.*

heterogeneous across different income levels, we divided the sample into low-income and high-income groups according to the median income level, and conducted dimensional regression analyses for each group. The results are shown in Table 5.

Heterogeneity analysis based on income level revealed significant group differences in the impact of various dimensions of social capital on mental health. Specifically, in the low-income group, both social trust and reciprocity showed significant positive effects ($\beta=0.452$, $p<0.001$; $\beta=0.174$, $p<0.05$), while in the high-income group, only social networks and social trust had significant effects ($\beta=0.241$, $p<0.01$; $\beta=0.228$, $p<0.01$), and the coefficient of social trust was significantly smaller than that in the low-income group. The explanatory power of the two models were $R^2=0.301$ (low-income group) and $R^2=0.274$ (high-income group), indicating that the models have a slightly stronger explanatory power for the variation in mental health among low-income groups. The direction and significance of the coefficients of the control variables remained basically consistent between the two groups, confirming the robustness of the model results.

Discussion.

Summary of Key Findings:

This study, based on a contemporary national sample, systematically examined the relationship between social capital and workers' mental health. The core findings can be summarized in three points: First, social capital, as a holistic construct, has a significant and independent promoting effect on workers' mental health. Second, when deconstructing different dimensions of social capital, its protective effect exhibits significant heterogeneity, with social trust having the strongest effect, followed by social networks, while the influence of reciprocity norms is not significant. Finally, a more in-depth analysis reveals that the impact of social capital is not homogeneous; it exhibits a stronger "psychological buffering" effect among low-income workers, particularly in the dimensions of social trust and reciprocity, highlighting this group's higher dependence on social support. These findings collectively point to the conclusion that in the digital economy era, social capital, especially its trust and network dimensions, is a key social asset for maintaining workers' mental health, and its value is particularly prominent for groups with disadvantaged socioeconomic status.

The Overall Protective Role and Multidimensional Structure of Social Capital:

Our study found that, after controlling for a range of key demographic and socioeconomic factors, overall social capital exhibits a significant positive association with mental health. This finding aligns well with the classic "stress buffering model," which argues that abundant social resources help individuals better cope with environmental stress. In the context of widespread job uncertainty and evolving social dynamics in modern economies, the emotional support, instrumental assistance, and valuable information accessible through social capital can collectively constitute an important resource for mitigating psychological risks.

However, viewing social capital as a homogeneous whole may be an oversimplification. Our multidimensional analysis reveals the complexity of its internal structure. Social trust proves to be the dimension most strongly associated with mental health, likely stemming from its ability to reduce uncertainty and transaction costs in the social environment, thereby providing individuals with a stronger sense of security and control—a core element of psychological well-being. High levels of social trust can foster a sense of security and belonging, which may be particularly valuable in environments where work arrangements or community structures are in flux.

The significant association observed for social networks reflects the potential importance of social connections; relationships maintained through the internet or offline activities provide a sense of belonging and stress relief. This finding underscores that the fundamental human need for social connection remains vital for mental well-being. In contrast, no significant association was found between the reciprocity dimension and mental health. Consistent with the reviewer's suggestion, we acknowledge that the most direct and parsimonious explanation for this null finding is the limited scope of our measure, which focused solely on monetary assistance. By defining reciprocity primarily through cash aid, our study captured only a narrow, material facet of a broader construct. Reciprocal exchanges often involve non-monetary support (e.g., childcare, advice, emotional comfort), which may hold greater significance for psychological well-being but were not measured here. Therefore, the non-significant result is most plausibly attributed to this measurement gap. Only after considering this primary methodological limitation can other social interpretations be entertained. For instance, in contemporary society, the role of formal, institutionalized support systems might have altered the dynamics of traditional cash-based mutual aid. Additionally, the influence of generalized reciprocity might be indirectly channelled through the more fundamental dimensions of social trust and networks.

Income Class Heterogeneity of Social Capital's Role:

This study's heterogeneity analysis yielded a finding with significant public health implications: social capital, particularly social trust and reciprocity, has a stronger protective effect on the mental health of low-income workers. This clearly reveals the role of social capital as a "compensatory resource." For low-income groups facing greater economic pressure and institutional barriers, close-knit, trust-based, and mutually supportive community connections are often the most direct and accessible support system they can rely on. Strong social trust can compensate for insufficient institutional trust, while timely reciprocal behavior can effectively alleviate the immediate pressure brought about by economic hardship.

Conversely, the role of social networks is relatively prominent among high-income groups. This aligns with their lifestyles and needs. The social networks of high-income earners are often linked to career development, information access, and opportunity expansion; their mental health benefits may stem more from personal growth and resource accumulation than from basic survival pressure buffers. This difference indicates that different dimensions of social capital function through different mechanisms in groups with different socioeconomic statuses. From the perspective of health equity, this finding emphasizes that enhancing the social capital of low-income groups, especially cultivating community trust and support systems, may be an effective entry point for narrowing the mental health gap and intervening in health inequalities.

Public Health and Clinical Practice Implications:

From a public health policy perspective, the findings of this study strongly recommend that strategies for promoting workers' mental health should move beyond individual-level psychological counselling and shift towards investing in and building supportive social and environmental environments. Governments and community organizations should actively create platforms that promote social interaction and mutual trust, such as supporting community centers, neighborhood activities, and volunteer services, to strengthen local social capital stocks. In the workplace, corporate management should strive to create a fair, transparent, and mutually respectful work environment, which is crucial for building social trust within the organization.

For clinicians and public health practitioners, when assessing patients' mental health risks, their social capital levels (such as the adequacy of social support, the size and quality of social networks) should be included in routine assessments. For individuals with insufficient social capital, especially low-income individuals, interventions may include encouraging participation in community activities, joining interest groups, or seeking peer support—a form of "social prescription." This intervention model, starting from social relationships, provides a promising and cost-effective path to addressing the social isolation and psychological stress that may be exacerbated in the digital economy era.

Conclusion.

This study, based on data from the 2022 China Family Panel Studies (CFPS), systematically examines the association between social capital and the mental health of Chinese workers. The main conclusions are as follows:

First, this study demonstrates that social capital is significantly and positively associated with better mental health among workers. This finding supports the relevance of the stress-buffering model, indicating that the resources embedded in social networks remain an important asset for psychological well-being in contemporary settings.

Second, this study, by deconstructing social capital, reveals the differentiated mechanisms of action among its various dimensions. Analysis shows that social trust is the core dimension of social capital's protective role in mental health, and its influence is the strongest. This suggests that a trusting social environment is crucial for an individual's sense of psychological security. The social network dimension also shows a significant independent contribution, highlighting the positive significance of maintaining a certain frequency and scale of social interaction. However, the reciprocity dimension, as measured in this study, was not significantly associated with mental health, suggesting that its role in this context may be limited or indirect.

Finally, and most importantly, the study found significant group heterogeneity in the mental health effects of social capital. This research found that social capital exhibits a stronger "compensatory effect" or "psychological buffering effect" on the mental health of low-income workers. In particular, the dimensions of social trust and reciprocity play a crucial role in the low-income group. This finding profoundly reveals the important value of social capital in promoting health equity: for groups with relatively scarce socioeconomic resources, abundant social capital can, to some extent, compensate for their structural disadvantages, becoming a more relied-upon form of capital for coping with life's pressures and maintaining psychological balance.

Research Limitations.

This study has several limitations. First and foremost, the cross-sectional design of this study precludes any causal inference. While we have identified significant associations between social capital and mental health, the direction of these relationships cannot be determined. It is possible that better mental health facilitates the building of social capital, or that a bidirectional relationship exists. Second, self-reported data may be subject to common methodological bias. Furthermore, although a range of variables were controlled for, unobserved confounding factors may still exist. Third, the operationalization of key constructs has inherent limitations. Specifically, our measure of reciprocity was confined to monetary assistance, which does not represent the full spectrum of reciprocal behaviors. As discussed, this specific measurement limitation is the foremost explanation for the lack of a significant association between reciprocity and mental health in our analysis. Future research should employ multi-item scales that capture both material and non-material forms of giving and receiving help within social networks. Fourth, the measurement of social capital dimensions, particularly social networks, has limitations. While we employed direct measures of social interaction frequency, the use of 'household transportation and communication expenditures' as a proxy, though theoretically grounded as an indicator of resource allocation for social maintenance, remains an indirect economic measure. Future studies would benefit from incorporating more direct and multifaceted assessments of social network structure, size, and quality. Fifth, key variables such as social status and income level were based on self-reported, single-item measures. While such subjective assessments are commonly used and valid indicators of perceived socioeconomic standing, they may be susceptible to personal bias and may not fully align with objective measures. However, our multicollinearity diagnostics (VIF < 5 for all variables) suggest that the potential bias from measurement error did not lead to inflated or unstable regression estimates in this model. These limitations point the way for future research improvements.

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Conflict of interest statement.

No potential conflicts of interest relevant to this article were reported.

Ethics approval and informed consent statement.

This Research was approved by the institutional review board at our institute, and all participants provided written informed consent.

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