Postprint: A Study on the Management Status and Related Factors of Family Doctor Teams in County Medical Consortiums

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Abstract

Background The effectiveness of family doctor teams under the county medical community is not high, the current status of team management remains unclear, and the perception of team management among members with different characteristics is also ambiguous. Objective To understand the current status of family doctor team management under the county medical community and to provide evidence for further improving family doctor team management. Methods From October to December 2022, a self-designed questionnaire was used to survey 1,724 key members from 429 family doctor teams under county medical communities in Hubei Province. The survey content included team configuration management, team interaction management, and team management outcomes. Chi-square test and one-way ANOVA were employed to analyze differences in team management perception among family doctor team members with different characteristics, while Pearson correlation analysis was used to explore the correlation between team interaction management factors and team management outcome factors. Results The internal team interaction intensity score of the 1,724 participants was $(22.3\pm5.3) points, and the perceived external liaison intensity score was (22.0\pm5.3) points. Regarding family doct$ points. Comparisons of team configuration management, team interaction management, and team management outcome perception among family doctor team members with different positions, professional titles, and age groups all showed statistically significant differences ($P<0.05$). There was a linear positive correlation between team interaction management factors and team management outcome factors ($P<0.05$). Conclusion Family doctor team members perceived the team configuration management situation as relatively good, though there remains room for improvement in team assessment and incentive measures; family doctor team interaction management was relatively good, and team interaction plays an important role in improving team management outcomes; family doctor team members had good perception

of team management outcomes, with perceived task performance lower than satisfaction and development capacity; family doctor team members with different positions, professional titles, and age groups had significantly different perceptions of team management.

Full Text

A Study on the Current Status and Related Factors of Family Doctor Team Management under County Medical Communities

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Abstract

Background The effectiveness of family doctor teams under county medical communities remains low, with an unclear current status of team management and uncertain perceptions of team management among members with different characteristics. **Objective** To understand the current status of family doctor team management under county medical communities and provide evidence for further improvement. **Methods** From October to December 2022, a self-designed questionnaire was used to survey 1,724 key members from 429 family doctor teams within county medical communities in Hubei Province. The survey covered team configuration management, team interaction management, and team management outcomes. Chi-square tests and one-way ANOVA were employed to analyze differences in team management perceptions among family doctor team members with different characteristics, while Pearson correlation analysis was used to examine relationships between team interaction management and team management outcome factors. **Results** The 1,724 respondents scored $(22.3\$\pm5.3)for intensity of internal team interactions and (22.0\pm5.3)for perceived intensity of external team liais$ for perceived team development potential. Statistically significant differences were found in team configuration management, team interaction management, and perceptions of team management outcomes among family doctor team members of different positions, professional titles, and age groups ($P<0.05$). Positive linear correlations existed between team interaction management factors and team management outcome factors ($P<0.05$). **Conclusion** Family

doctor team members perceived team configuration management as relatively good, though team assessment and incentive measures require improvement. Team interaction management was effective, with team interactions playing an important role in enhancing team management outcomes. Perceptions of team management outcomes were generally positive, though perceived task performance was lower than satisfaction and development capacity. Significant variations in team management perceptions existed among members of different positions, professional titles, and age groups.

Keywords County medical community; Family doctor team; Team management

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1. Methods

1.1 Data Sources

To minimize interference from confounding factors, sampling was concentrated within Hubei Province under similar external macro-policy environments. Using stratified random sampling, 32 township health centers were selected as sample institutions based on geographic distribution within three county medical communities with well-established three-tier service systems. Family doctor teams were sampled at 60% of the total number of teams in each health center, yielding 429 sample teams. All key members (family doctors, nurses, village doctors, and public health physicians) from these teams were surveyed, resulting in 1,724 valid samples. Informed consent was obtained from all participants prior to data collection.

1.2 Survey Instrument

A self-administered questionnaire was used to survey family doctor team members, consisting of two parts: a basic information form and a family doctor team management survey. (1) The basic information form, developed by the research team, included position, gender, age, education, marital status, establishment status, professional title, and annual personal income. (2) The team management survey covered seven dimensions: effectiveness of team assessment and incentive measures, rationality of team staffing configuration, intensity of internal team interactions (4 items), intensity of external team interactions (4 items), team task performance (6 items), team satisfaction (4 items), and team development potential (5 items). The dimensions of assessment/incentive effectiveness and staffing rationality reflected team configuration management and were measured with single items offering three response options. Internal and external interaction intensity reflected team interaction management, while task performance, satisfaction, and development potential reflected team management outcomes. Measurement items were adapted from scales developed by Hu Qiuming[12], Yuan Bingyao[13], Yu Mingli[14], and Xie Juan[15], all using a

7-point Likert scale. Cronbach's alpha coefficients for each dimension in this study ranged from 0.977 to 0.992, indicating good reliability and validity.

1.3 Quality Control

Prior to the formal survey, a pilot study was conducted with family doctor service teams from two township health centers under a compact county medical community in Hubei Province. Feedback from the pilot was used to refine and revise the questionnaire. The formal survey employed anonymous on-site questionnaire administration, with researchers providing standardized instructions, completion guidelines, and uniform responses to potential questions. During data processing, questionnaires were checked for logical consistency, and those with obvious response patterns or missing data for over 20% of items were excluded.

1.4 Statistical Analysis

SPSS 26.0 software was used for data analysis. Categorical data were expressed as relative frequencies, with inter-group comparisons using chi-square tests. When statistically significant differences were found among multiple groups, Bonferroni correction was applied for pairwise comparisons. Continuous data were expressed as (x-±s), with inter-group comparisons using one-way ANOVA. For significant differences among multiple groups, pairwise comparisons were conducted using LSD-t tests for homogeneous variances and Tamhane tests for heterogeneous variances. Pearson correlation analysis was used to examine relationships between team interaction management and team management outcome factors. Statistical significance was set at $P<0.05$.

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2. Results

2.1 Basic Characteristics of Family Doctor Team Members

Among the 1,724 surveyed key members of family doctor teams, 431 (25.0%) were family doctors, 353 (20.5%) were nurses, 487 (28.2%) were village doctors, and 453 (26.3%) were public health physicians. The sample included 939 females (54.5%), with a mean age of (43.5$±$11.1) years. Regarding education, 686 (39.8%) had high school/technical secondary school education or below, and 671 (38.9%) had junior college degrees. Most participants were married (1,584, 91.9%), and 888 (51.5%) had formal establishment status. For professional titles, junior-level titles were most common (768, 44.5%). Annual personal income was predominantly in the 30,000–50,000 RMB range (958, 55.6%).

2.2 Family Doctor Team Members' Perceptions of Team Management

In terms of team configuration management, 62.9% (1,084/1,724) of members perceived team assessment and incentive measures as effective, 28.9%

(498/1,724) perceived them as moderate, and 8.2% (142/1,724) perceived them as ineffective. Regarding staffing rationality, 88.7% (1,530/1,724) perceived their team configuration as reasonable, 9.6% (166/1,724) as moderate, and 1.6% (28/1,724) as unreasonable.

For team interaction management, members scored (22.3$\pm$5.3) $for perceived intensity of internal team interacti$ for team development potential.

Pearson correlation analysis revealed that internal team interaction intensity was positively correlated with team task performance (r=0.901, P<0.01), team satisfaction (r=0.885, P<0.01), and team development potential (r=0.888, P<0.01). External team interaction intensity was also positively correlated with team task performance (r=0.908, P<0.01), team satisfaction (r=0.876, P<0.01), and team development potential (r=0.887, P<0.01).

2.2.1 Comparison of Team Management Perceptions by Position Significant differences were found among family doctor team members of different positions in their perceptions of assessment/incentive effectiveness, staffing rationality, internal interactions, external interactions, task performance, satisfaction, and development potential (P<0.05). Post-hoc comparisons showed that nurses reported higher proportions of "effective" assessment/incentive measures than family doctors, village doctors, and public health physicians (P<0.008). For staffing rationality, public health physicians reported higher proportions of "unreasonable" perceptions than family doctors and nurses (P<0.008). Among the four positions, nurses scored higher than family doctors, village doctors, and public health physicians on internal interaction intensity, external interaction intensity, task performance, satisfaction, and development potential (P<0.05). Family doctors scored higher than public health physicians on task performance, satisfaction, and development potential (P<0.05), and higher than village doctors on external interaction intensity (P<0.05) .

2.2.2 Comparison of Team Management Perceptions by Professional Title Significant differences were observed among members with different professional titles in all team management dimensions (P<0.05). Post-hoc analyses revealed that members with senior-level titles or above reported higher proportions of "effective" assessment/incentive measures and lower proportions of "moderate" responses compared to those with no title, junior, and intermediate titles (P<0.008). Junior and intermediate title holders reported lower proportions of "ineffective" measures than those without titles (P<0.008). For staffing rationality, intermediate title holders reported lower proportions of "unreasonable" perceptions than junior title holders (P<0.008). Members with senior-level titles or above scored higher than those with no title, junior, and intermediate titles on internal interaction intensity, external interaction intensity, task performance, satisfaction, and development potential (P<0.05). Intermediate title holders scored higher than junior title holders on external interaction intensity and task performance (P<0.05) .

2.2.3 Comparison of Team Management Perceptions by Age Group
Significant differences were found across age groups in all team management dimensions (P<0.05). Post-hoc comparisons indicated that members aged 30–39 reported lower proportions of "effective" assessment/incentive measures than those aged 20–29 (P<0.005). They also reported lower proportions of "reasonable" staffing configurations and higher proportions of "moderate" responses than those aged 40–49, while reporting lower proportions of "unreasonable" perceptions than those aged 20–29 (P<0.005). Members aged 20–29 scored higher than those aged 30–39 on internal interaction intensity, external interaction intensity, task performance, satisfaction, and development potential (P<0.05). Members aged 40–49 scored higher than those aged 30–39 on these same dimensions (P<0.05). Members aged 50–59 scored higher than those aged 30–39 on internal and external interaction intensity (P<0.05). Members aged $ $60 scored lower than those aged 20–29, 40–49, and 50–59 on internal interaction intensity, external interaction intensity, task performance, and satisfaction (P<0.05), and lower than those aged 20–29 and 40–49 on development potential (P<0.05) .

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3. Discussion

3.1 Team Configuration Management Perceived as Relatively Good, Though Assessment and Incentive Measures Require Improvement

The survey found that 62.9% of family doctor team members perceived team performance assessment measures as "effective," yet 28.9% perceived them as "moderate" and 8.2% as "ineffective." Overall, perceived effectiveness of performance assessment measures among sample members was not high, reflecting a long-standing issue in China's family doctor team construction[16]. Ineffective assessment and incentive measures can severely impact work motivation[10] and may become a critical constraint on policy implementation. Team compensation distribution for family doctor contract services suffers from equal-split practices, weak linkage to service outcomes, and monotonous incentive forms. Public health physicians particularly perceived low assessment effectiveness, as their work involving data entry and record management—though burdensome—is not adequately reflected in performance assessments or internal compensation distribution, potentially reducing motivation. Sample areas primarily used contract rates and basic public health service workload for performance assessment, with some consideration of prevalence and incidence rates among key populations, but implementation was unsatisfactory, consistent with practices elsewhere[17]. Regarding staffing, 88.7% of members perceived team configuration as reasonable. Sample area teams generally followed a structure of family doctor + nurse + village doctor + public health physician. Village doctors and public health physicians reported higher proportions of "moderate" and "unreasonable" perceptions than family doctors and nurses, possibly because these positions involve high-pressure, high-load, repetitive work[18].

3.2 Effective Team Interaction Management with Important Contributions to Team Outcomes

In team-based contract service delivery, tasks cannot be separated independently, forming a relatively stable, institutionalized, and sustainable social network[19]. County medical community family doctor teams primarily work through online communication and joint field visits, with interaction frequency and forms determined collectively by members. Results showed internal interaction intensity scored (5.6$±$1.3), indicating strong internal interactions and effective management. Internal interaction intensity was positively correlated with task performance, satisfaction, and development potential (r>0.85, P<0.05). Family doctor team members engage in various formal and informal interactions including knowledge training, referrals, consultations, and communication, promoting knowledge/information sharing and fostering shared cognition, values, and beliefs that enhance cooperation and overall performance. This suggests that beyond regular team meetings and collective field visits, diversified approaches to strengthen internal interactions could improve management effectiveness.

External interactions under county medical communities primarily involve engagement with higher-level medical institutions and community residents. Effective external interaction management can scientifically and efficiently promote team skill development. External interaction intensity scored $(5.5\$\pm1.3), with positive correlations to task performance, satisfaction, and development potential ($r > 0.85, P < 0.05$). Interaction with higher-level institutions mainly involves technical support and platform resour level specialists for health education and clinical skills training. Interaction with residents through long-term contractual relationships helps transform the dynamic from adversarial to trust-based reciprocal engagement, improving resident participation and doctor motivation[21]. Resident participation prov

3.3 Positive Perceptions of Team Management Outcomes with Lower Task Performance Relative to Satisfaction and Development Potential

Family doctor team members scored $(5.5\$\pm1.2) for task performance, (5.6\pm1.2) for satisfaction, and (5.6\pm1.3) f$ possibly due to good staffing and knowledge-sharing channels in county medical community three-tier networks that facilitate skill development.

3.4 Significant Variations in Team Management Perceptions Across Positions, Titles, and Age Groups

Different member characteristics showed varying perceptions, requiring attention to personalized needs. Nurses scored higher than other positions on all dimensions, likely because they primarily perform less difficult auxiliary work and serve as liaisons among members, facilitating more interactions and knowledge acquisition. Public health physicians, engaged in substantial simple repetitive work with low 成就感 [18], showed lower satisfaction with their role and lower perceived assessment effectiveness, indicating need for management interventions. Comparisons by professional title showed senior-level members had higher perceptions, but both this study and Wang et al.[24] found high proportions of

untitled and junior-level members who constitute the main service providers—suggesting compensation distribution should favor these career-stage members. China's aging primary care workforce[26] was evident, with 31.83% of members aged $ $50 who may face physical limitations and declining performance. Members aged $ $60 showed lower scores across dimensions, warranting team rejuvenation and reduced workloads for older members.

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4. Recommendations

4.1 Strengthen Primary Care Resources to Reduce Member Burden

China's primary care workforce shortage, aging village doctor pool, and weak service capacity constrain reform and development[26]. Mismatched income and workload, plus heavy burdens on village doctors, hinder high-quality development. First, leverage county medical community unified personnel management through itinerant clinics, county-managed township-use programs, and targeted training of university student village doctors to supplement and develop the workforce. Second, increase platform resource support using smart devices and information technology to simplify daily work and reduce burden. Third, improve primary care compensation, implement reward-penalty mechanisms, and provide special subsidies to well-performing teams and individuals to enhance motivation.

4.2 Address Diverse Member Needs Through Personalized Management

Significant perception differences require attention to personalized needs of different members. Increase emphasis on public health physicians by raising their share of special family doctor funds, understanding their needs, and implementing targeted incentives. During secondary compensation distribution, favor village doctors with high workload and good service quality. Leverage nurses' liaison roles by expanding their responsibilities to share workload. Enhance team leaders' capabilities through regular county medical community training. Recognize the main force role of junior and untitled members in contract service delivery, and consider compensation 倾斜 toward early-career members to improve task performance and satisfaction.

4.3 Improve Team Interaction Management to Enhance Service Effectiveness

Promote internal and external interactions through compensation incentives and shared value formation. Encourage teams to establish good communication channels through regular meetings and supervision, standardizing task objectives, role division, performance assessment, and distribution to improve overall cognition of service content and tasks, fostering responsibility and cohesion.

Further refine performance assessment supporting measures by developing multi-dimensional indicators covering service volume, quality, and outcomes, with different weight coefficients based on project difficulty and time costs[27]. County medical communities should delegate financial authority for autonomous distribution, with township health centers and teams establishing internal secondary allocation mechanisms specifying individual performance distribution ratios to avoid egalitarianism.

Limitations: (1) Data were based on member perceptions, potentially introducing reporting bias; (2) The study primarily compared differences among member characteristics—incorporating influencing factor analysis could yield more comprehensive insights; (3) Convenience sampling limited representativeness; expanded regional random sampling would improve generalizability. Future research will conduct more comprehensive longitudinal studies with expanded scope.

Author Contributions: CONG Yating, DAI Yao, BAO Xinyu, and TAO Hongbing conceptualized and designed the study. CONG Yating, DAI Yao, and BAO Xinyu collected, organized, and cleaned data. CONG Yating performed statistical analysis and drafted the manuscript. DAI Yao and BAO Xinyu proofread and revised the manuscript. TAO Hongbing supervised quality control and takes overall responsibility.

Conflict of Interest: The authors declare no conflicts of interest.

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Note: Figure translations are in progress. See original paper for figures.