

Female Rise in Medicine and the Social Influence amongst Chinese Physicians: A Cross-Sectional Survey

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Abstract:-

Background: Rise of women in medicine has been widely acknowledged mainly from empirical data sources. This study aimed at assessing female rise in medicine and the social influence amongst Chinese physicians. **Methods:** A cross-sectional survey with 16-items was conducted on physicians and graduate students from three tertiary teaching hospitals in Wuhan, Hubei Province. **Results:** 1012 respondents took part in the study. Interestingly, 53% of women physicians were in Internal Medicine while 56.7% of male physicians were in Surgical departments ($p < 0.001$). Gender partiality would ensue in medical faculties; recruitment (86%, $p < 0.001$). Primarily, female physicians have been established to withstand marked familial tension (74.5%, $p < 0.001$). Moreover, physical (89.9%), psychological abilities (72.7%, $p < 0.001$) of female physicians were perceived as lesser. However, their qualifications (89.7%, $p = 0.044$) and clinical work (95.9%, $p < 0.001$) were comparative. **Conclusion:** Owing to anticipated fewer male physicians, they will be recruited, promoted and awarded competitive wages. On the other hand, women doctors bear more familial-related tension due to work and family demands at the same time and hence might postpone family intentions. Besides; their physical, psychological abilities are lower, but competencies are comparative.

Keywords:- Women; Medicine; Social Effects; China; Family; Physician.

I. INTRODUCTION

Women have presently made huge progress in medical school enrollment, residency and ultimately in medical practice globally. This phenomenon has been extensively documented from empirical evidences worldwide in the past half century in Norway, U.S., UK, Israel, North-America, Netherlands and China [1-15]. In the United States, women

comprised 5% of medical students in 1960,[3, 16] 14% in 1972[4], 38.5% in 1975[9], 50% in 1999[12], 46.5% in 2000[9], and 60% in 2005[7]. Moreover, women physicians in U.S. accounted for approximately 10% in late 1800s[14] and steadily rose to 28% and 38% in 1989 and 2000 respectively[3].

In the United Kingdom, it was established that female medical students constituted 62%, 59% and declined to 57% in 2003, 2006 and 2007 respectively[8, 13]. A consistent rise was observed in England in a study published in 2009 as nearly 40% of physicians were women doctors, general practitioners (42%), and consultants (28%)[8].

Studies in Norway indicated 50% in the 1900s[1] and Israel recorded 24% in 1969 and 46% in 1989 of female medical students. Additionally, 49% of Israeli doctors were female as of 1993[6]. A 2008 study by Van der Velden et al. suggested the same phenomenon in Netherlands as 40% of physician work force and 34% of all specialists were female. It is anticipated that by 2027, 66% of all physicians will be females[11]. In china, similar phenomenon have been heightened at medical colleges where 55%-77% were females[17]. Furthermore, women physicians constituted 43% of physicians as cited in 2008[15].

British-born Elizabeth Blackwell was the first woman to be admitted to an American New York's Geneva Medical School in 1847 and graduated in 1849[18]. In the later part of 19th century, the first woman's Jefferson Medical School in Philadelphia; Pennsylvania, was instituted after which the New England hospital for women and children was launched that allowed for female physicians' medical practice[19]. To date, no study has examined policy implications of recruitment, promotion and perception towards capabilities of female doctors besides work-family balance. Therefore, this study was designed to fill this gap.

II. METHOD

A 16-itemized closed-ended, self-administered questionnaire was developed to investigate three (3) thematic areas: Recruitment, leadership and promotion of Women physicians, perception on work-family balance and capabilities of male and female physicians. Dichotomous responses were assigned to each item; 1=agree, 2=disagree.

The population of interest comprised of both physicians and medical students at Tongji Medical College and its affiliated teaching hospitals in Tongji, Wuhan Union and Liyuan Hospitals. A cross-sectional survey approach was adopted and administered face-to-face from 19th July to 30th September 2016. The study protocol was approved by Institutional Review Board (IRB) at Tongji Medical College.

A. Data Entry and Statistical Analysis

Epi-data 3.1 software was used to establish the database. Statistical analyses were then performed using Statistical Package for Social Sciences version 22; SPSS Inc., Chicago, Ill for windows®.

Descriptive statistics by use of absolute numbers and percentages were useful in characterizing baseline information. Chi-square test (χ^2) was then computed to evaluate gender differences in socio-demographic variables as well as compare responses in respective thematic areas. Statistical tests and Confidence Intervals (CI) were two-sided with a significance level of 0.05 ($p \leq 0.05$).

III. RESULTS

A. Demographics

In total, 1012 respondents accepted to take part in the survey with 597 (59.3%) females and 409 (40.7%) males. Overall, physicians comprised 584 (57.7%) whilst medical students were 428 (42.3%). Female doctors were more likely to consider building a career in Internal Medicine 168 (53%), Obstetrics/Gynecology 57(18%), Radiology 25(7.9%) or Pediatrics 19(6%) as opposed to Surgical specialties 39(12.3%). Male physicians on the other hand preferred surgical units (56.7%, $p < 0.001$). (**Table I**)

B. Recruitment, leadership and promotion of Women physicians

With more female doctors, It would lead to marked gender biasness at recruitment (86%, $p < 0.001$), leadership (60.3%, $p = 0.029$) and career advancement (63.3%, $p < 0.001$). (**Table II**)

C. Work-Family balance

Female doctors bear pronounced familial stress; (74.5%, $p < 0.001$) which affects work-family balance (67.5%). (**Table III**)

D. Perception towards Female and Male Doctors

It was firmly acknowledged that female doctor's physical strength is relatively lesser (89.9%) but their clinical care and expertise is not inferior (95.9%, $p < 0.001$). Notably, female doctors and students face more obstacles in handling

the same duty (76.5%, $p < 0.001$). Nevertheless, being a doctor is not gender-specific (6.8%, $P < 0.001$). Male physicians were perceived to tolerate psychological strain better (72.7%, $P < 0.001$). (**Table IV**)

IV. DISCUSSION

Our study observed gender differences regarding doctorate accomplishment attributable to the consequent variations in seniority as more male physicians were at respective senior, associate senior and intermediate levels of professional title.

Distinctively, approximately half of women physicians were concentrated in Internal Medicine and the rest in obstetrics/gynecology, pediatrics, radiology and anesthesiology but male physicians were represented in surgery. Compelling body of literature has since pointed out marked gender disparities between physicians regarding medical specialties as male physicians are over-represented in Surgical units whilst female counterpart are diminished in Surgery and overly concentrated in Obstetrics and Gynecology, Internal Medicine, Pediatrics, Psychiatry, Family Medicine, Radiology [1, 20-24].

Several other studies on academic medicine illustrate this discrepancy as well. Nearly half of papers (49%) in Pediatrics, Psychiatry (40%), Gynecology (29%) were authored by female doctors[25]. A similar pattern was observed in a 2009 study by Sidhu and colleagues who pointed out rise of female first authors in the BJOG of 58.3% up from 9.5% as opposed to the British Journal of Surgery (BJS) that had a marginal rise of 4% to 15.6% and Gut journal with a minimal rise of 12.2% to 26.1% [26].

A. Recruitment, leadership and promotion of Women physicians

Phenomenal rise of women physicians is speculated to exacerbate gender inequity in recruitment, promotion and lower wages as per our study. At the same time, more qualifications would be integral according to female physicians. It has been reported that women are overlooked at recruitment[27] and promotions[26]. It was established 10% of women and 24.7% of female college students in China reported to have faced gender intolerance at employment. In the same survey, 20.6% claimed men should be prioritized over women given the same capabilities and hiring men at technical and managerial levels (47%)[28].

Extensive literature indicates men's wages are relatively higher than women's. In the United States, full-time female workers' earnings were 77.5% of their male counterparts in every sector in 2002[29] and this has been established in our study. In China, women's wage was an equivalent of 67.3% and 56.0% of their male counterpart in urban and rural areas respectively in 2010[28]. Physicians' wage inequities have been well documented as well in literature [19, 30-33]. Yet a U.S. survey in 2002 established variation in median wages of medical faculty in respect to gender; female assistant professor's income was US \$ 71,000 whereas male's equivalent was US \$ 75,000. Women full

professors' pay were US \$114,000 whilst men's equivalent were US \$ 131,000 which was evidently higher[19].

Consistent findings in another medical faculty also indicated that on average, women had lower wages than men with similar experience and academic rank. Specifically, a male associate professor was awarded \$122,172 annually as opposed to \$102,189 for female counterpart given the same qualifications[30, 31]. Male physician's wages were also found to be 10% higher (+\$10,921) than women equivalent's in yet another study[32]. Equivalently, differences were confirmed with expected wages given the same age of 45; women could earn \$89,730 (95% CI: \$85,010-\$94,450) and \$103,470 (95% CI: \$98,950-\$ 107,980) for male counterpart annually[33]. However, some explanation has been suggested for wage inequalities in medicine: generally male physicians are concentrated in surgical specialties whose incomes rates are somewhat higher in comparison to department units in which women specialize in such as pediatrics, internal medicine, general practice and psychiatry[34].

B. Perceived influence on Work-Family balance

Predominately higher familial stress is borne by female physicians according to our study. This is informed by suggestions of conflicting work and familial obligations that are equally demanding. Overwhelming body of literature has revealed that career advancement in women especially in medicine are constantly influenced and in conflict with familial responsibilities especially raising children, maternity leave and caring for parents[14, 20, 26, 31, 35-41]. Hence therefore, their career pattern has been proposed as an M-shaped with a likely rise in early and later part of their profession. A 2002 study by Sonnad et al. found that more male physicians were more probable to miss familial responsibilities whereas female physicians on their part were more likely to prioritize familial obligations over work activities[35].

Women doctors were more likely than their male counterpart to postpone family plans due in part to impediments in finding a suitor who can be supportive in light of demanding clinical workload. Previous literature validated these conclusions as well[25, 36] by illustrating that male physicians were far more probable to be parents after accomplishing PhD as compared to their female counterparts [42].

It is important to highlight some evidences that more female physicians suspend family intentions after surgical training relative to their male counterpart and female doctors in non-surgical specialties[34]. Moreover, amongst those married, a huge number of their spouses had full time job far away from home[35, 36, 42]. Similar observations were put forward by Heckenberg et al.[25] that female physicians who worked full time were more often without children and single in comparison with female colleagues working part-time. It has also been reported that clinical work unfavorably affects relationship with spouse whilst female doctors had poor support from their spouses[35, 36, 43].

C. Perception towards female and male Physicians

Findings from our study demonstrated that female doctors' physical and psychological strength are to some extent lesser and more often face more impediments in the course of their work even though their professional capabilities are similar. Previous studies also applaud these perceptions as female medical students have propensity to undervalue, feel hesitant of their proficiency and be more stressed [27, 34, 44] whilst male counterpart are more apt to overestimate their capabilities and identify themselves with being a doctor at the end of medical training[45]. The perception that correlates being a physician as gender-specific is changing as per our study; demonstrating that gender ideologies has evolved over time albeit slowly. This was further validated by male students and surgical male physicians who perceived that gender is indeed not fundamental in medicine[40]. However, instances exist where authors ascribe women in medicine as 'feminization of medicine'[38, 46].

Female physicians also acknowledged more obstacles that accompany them in any given task. We suggest anxiety as a result of undermining their capabilities. A growing body of literature augment that female medical students reported more anxiety, exhaustion [44, 47-49] and scored higher on test anxiety and general anxiety. Some authors reported perceptions about secondary role of female doctors, [1, 41] and male doctors as more competent as indicated by some subjects in our study as well. There has been instances where female doctors agreed to having lower surgical skills[20] but had higher scores as facilitators[14]. It has also been reported that male physicians more often finds hard to accept women as their equivalent and make an effort to be at ease with them [35] and this was also confirmed in our study.

D. Limitations of the Study

The cross-sectional nature of the study cannot infer causal associations. Further longitudinal studies as cohorts of medical students are required to examine long-term influence in medical practice before the present findings can be generalized.

V. CONCLUSION

Entry of women in Medicine has been documented world-wide. It is conjectured to exacerbate gender inequity at recruitment, promotion and wages. Efforts geared towards alleviating gender inequity should therefore be prioritized. Fundamentally, female physicians juggle between work and more familial obligations. It is important to note that female physicians' competencies and clinical skills are at bar to their male counterparts.

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Variable	Total		Male		Female		χ^2	P
	N	%	n	%	n	%		
Age-groups								
≤25	145	24.8	59	22.3	86	26.9	4.991	0.172
26-34	310	53.1	136	51.5	174	54.4		
35-44	103	17.6	55	20.8	48	15.0		
≥45	26	4.5	14	5.3	12	3.8		
Total	584	100	264	99.9	320	100.1		
Professional Titles								
Senior	15	2.6	13	4.9	2	0.6	18.773	0.001
Associate senior	49	8.4	29	11.0	20	6.3		
Intermediate	168	28.9	78	29.5	90	28.3		
Junior	167	28.7	62	23.5	105	33.0		
Intern	183	31.4	82	31.1	101	31.8		
Total	582	100	264	100	318	100		
Marital Status								
Single	295	50.7	126	47.7	169	53.1	1.694	0.193
Married	287	49.3	138	52.3	149	46.9		
Total	582	100	264	100	318	100		
Educational Level								
Junior College	13	2.2	4	1.5	9	2.8	8.012	0.046
Undergraduate	187	32.2	74	28	113	35.6		
Master	192	33	86	32.6	106	33.4		
Doctorate	189	32.5	100	37.9	89	28.1		
Total	581	99.9	264	100	317	99.9		
Clinical Specialties								
Emergency medicine	9	2.0	3	1.0	6	2.0	133.317	<0.001
Internal Medicine	247	42.6	79	30.0	168	53.0		
Surgery	188	32.4	149	56.7	39	12.3		
Obstetrics/Gynecology	70	12.1	13	4.9	57	18.0		
Pediatrics	28	4.8	9	3.4	19	6.0		
Infectious Disease	4	0.7	1	0.4	3	0.9		
Others (Radiology, Anesthesiology)	34	5.9	9	3.4	25	7.9		
Total	580	100.5	263	99.8	317	100.1		

TABLE II. WOMEN PHYSICIANS IN CLINICAL PRACTICE, LEADERSHIP AND PROMOTION

Variable	Total		Male		Female		χ^2	P
	N	%	N	%	n	%		
Inadequate male doctors in some departments	740	74.1	306	75.2	434	73.3	0.441	0.507
Marked recruitment inequality on women physicians	770	76.9	261	63.8	509	86.0	66.947	<0.001
Promotional difficulty for female physicians	497	50.3	124	31.0	373	63.3	99.586	<0.001
Department leaders will be females physicians	424	42.5	189	46.7	235	39.7	4.781	0.029
Higher income for male physicians	356	35.7	121	29.9	235	39.6	9.974	0.002

^a% : Proportion of Agreement Responses; $p \leq 0.05$

TABLE III. INFLUENCE ON WORK-FAMILY BALANCE

Variable	Total		Male		Female		χ^2	P
	N	%	n	%	n	%		
No effect	326	32.5	141	34.5	185	31.1	1.264	0.261
Difficulty in finding an equivalent or a more qualified suitor	704	70.0	289	70.8	415	69.5	0.201	0.654
Hesitant male physician in accepting women physicians	475	47.3	160	39.2	315	52.9	18.068	<0.001
Female physicians bear higher familial stress	656	65.6	214	52.6	442	74.5	51.56	<0.001

^b% : Proportion of Agreement Responses; $p \leq 0.05$

TABLE IV. PERCEPTION TOWARDS FEMALE AND MALE DOCTORS

Variable	Total		Male		Female		χ^2	P
	N	%	n	%	n	%		
A woman is better suited as a physician	89	15.3	18	6.8	71	22.4	26.768	<0.001
Women doctors face more obstacles for the same task	388	66.7	144	54.8	244	76.5	30.648	<0.001
Female physician's physical strength is lesser	525	89.9	242	91.7	283	88.4	1.661	0.197
Male physicians endure psychological tension better	359	61.5	192	72.7	167	52.2	25.768	<0.001
Female physician's work is lesser	53	9.1	40	15.2	13	4.1	21.557	<0.001
Female physician's professional achievement is not lesser	509	87.2	222	84.1	287	89.7	4.048	0.044
Male doctors are hesitant to accept female doctors as department leaders	147	25.3	69	26.1	78	24.6	0.179	0.673

^c% : Proportion of Agreement Responses; $p \leq 0.05$

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