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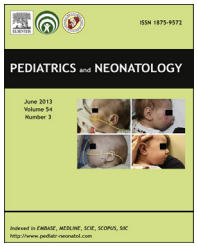

ORIGINAL ARTICLE

Career Satisfaction, Commitment, and Well-being Among Taiwanese Pediatricians

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Key Words
pediatrician;
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work satisfaction

Background: Currently, the pediatrician shortage in Taiwan has raised concerns about pediatricians' workloads and wellbeing. This study aimed to understand in-hospital pediatricians' perceptions toward career satisfaction and their wellbeing.
Methods: A questionnaire exploring pediatricians' life management, commitment to work, and work satisfaction was distributed to all the pediatricians (including attending physicians and residents) in 79 certified training institutions in Taiwan. After expert validation and pilot testing, 17 items with a five-point rating scale were developed to reflect the pediatricians' perceptions. There were 287 responses in total, including 180 attending physicians and 107 residents. Factor analysis was used to explore the construct structure underlying the 17 items.
Results: None of the 17 items had a "positive" mean score ($\geq$4/5). Using factor analyses, five factors were extracted: commitment to medical career, self-care, benefit, work environment, and job satisfaction, which accounted for 66.97% of the variance. The factor with the lowest scores was self-care, followed by benefit. The mean score of factors ranged from 2.91 $\pm$ 0.17 to 1.64 $\pm$ 0.1, all considered "negative." Only 33.6% indicated satisfaction with their jobs. Only 60% of the pediatricians liked their medical career and work environment. The reliability alphas of the five factors ranged from 0.85 to 0.60.
Conclusion: Currently, Taiwanese pediatricians are not satisfied with their jobs, having low commitment, poor self-care, and little wellbeing. This study provides a possible explanation for why young physicians leave the pediatric sector, and it also reveals the consequences of physician shortage in Taiwan.

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1. Introduction

Since 2000, the Taiwanese birth rate has been the lowest in the world (8.29 per 1,000 people), and the fertility rate was 1.0 child per woman for the year 2009.[1] In 2009, the percentage of the population below age 15 was only 15.65% in Taiwan, as compared to 20% in the United States. The low number of children and other factors also have caused the pediatric speciality to generate low financial benefits. In a possible reaction to the further decline in the pediatric population and the low economic benefits, pediatric specialist enrollment dropped from 133 in 2005 to 94 in 2009,[2] which was even more severe than the drop in the youth population. It is believed that the decline in the number of pediatricians has created a personnel shortage. Based on a national survey on pediatricians' workloads, 85% of attending physicians responded that they had to take night shifts due to a pediatrician shortage. The pediatrician shortage is currently a critical problem in Taiwan.[3]

The shortage of physicians increases physicians' workloads and may hamper patient safety. Patient safety should be maintained consistently for all children who visit, stay, or are born in a hospital. Combining the requirements of timeliness, effectiveness, efficiency, equitableness, and patient-centered care,[4] physicians' workloads have increased greatly over the levels in the past. It has been reported that heavy workloads and stress significantly affect patient care quality, physician performance, absenteeism, turnover, and organizational performance.[5] Early detection of these problems and adopting effective solutions will prevent physicians from burning out.

The major purpose of the study was to understand how many Taiwanese pediatricians are satisfied with their work and value their careers. This study also identified and explored the meaning of the structure of latent traits underlying what the pediatricians perceived toward their work and lives.

2. Methods

In September 2011 to November 2011, all the pediatricians (including attending physicians and residents) in the certified training institutions were invited to respond anonymously to the questionnaire. The accreditation standards of being a pediatric training institution in Taiwan included the items on faculty, equipment, and service volume among others.[6] By the end of 2011 there were 79 pediatric training programs that were approved by the Taiwan Pediatric Association. Electronic and paper questionnaires were distributed to these hospitals, and the participants were a "voluntary convenience sample" who responded to the invitation.

2.1. Participants

There were totally 287 responses from 57 hospitals. The response rates were 72.2% (57/79) for the hospitals, 58.8% for the residents and 21.6% for the attending physicians. There were 195 males and 92 females, aged 24 to 73 years. There were 180 voluntary attending physicians and 107 pediatric residents. The attending physicians, aged 41.9 $\pm$ 8.69 years, were 131 males and 49 females. The residents, aged 29.46 $\pm$ 2.96 years, were 64 males and 43 females. The participants were grouped by region, with the majority from Taipei/Keelung (130, 44.8%), followed by 43 in Tai-Chung/Chang-Hua, 27 in Yun-Chia-Nan, 48 in Kaohsiung/Pingtung, 29 in Tao-Chu-Miao, and 10 in Yilan/Hua-Tung. As for the hospital model, 135 were from medical centers, 140 were from regional hospitals, and 12 were from local hospitals.

2.2. Questionnaires

Based on the questionnaire by Dr. Sargent et al,[7] items were selected to fit the research purpose for either pediatric residents or attending physicians who worked in Taiwan. In the early stage of questionnaire development, expert validation and pilot testing were conducted to check relevance, clarity and accuracy. The final questionnaire was composed of 17 items (Table 1), which probed the extent to which each item reflected the respondents' values and beliefs. The items were categorized into three domains: the commitment to work (items 1—3), life management (items 4—7), and work satisfaction (items 8—17). In addition, questions gathered background and demographic information from the respondents (e.g., gender, professional position). The questionnaire used a five-point rating scale that indicated: (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, and (5) strongly agree. The data of "negative" questions were inverted for analyses; thus, a high point (4

Table 1 Questionnaire items that asked participants about their perceptions on commitment to work, physical mental wellness, and work satisfaction.

No.	Item
1	I like my clinical work.
2	I like the research work.
3	I like the teaching work.
4	I am too busy to receive a health examination.
5	I am too busy to take leave for leisure.
6	I am too busy to handle house/personal matters (e.g., banking, cleaning)
7	I am too busy to maintain connections with families and friends.
8	I am thinking of changing my job or career.
9	What I obtained was not equal to what I expended.
10	I like the region and living environment where I serve my patients.
11	The clinical practice made me feel threatened, either in terms of personal safety or by a lawsuit.
12	I perceive respect from society and people.
13	I can find support when confronted with difficult problems in medical practices.
14	The work environment is comfortable for me.
15	I experience personal growth and development in my clinical practice.
16	My career can bring out my intelligence and talent.
17	I am wealthy because of my job.

Table 2 Summary of the mean scores and the proportion of agreement on the pediatricians' perceptions: 17 question items on work satisfaction, commitment and life quality.

Item no.	1	2	3	4	5	6	7	**8**	9
R m	3.9 ± 0.7	3.1 ± 0.8	3.6 ± 0.7	2.6 ± 1.2	2.4 ± 1.2	2.4 ± 1.0	2.6 ± 1.0	**3.4 ± 1.1**	3.0 ± 1.1
p	82.6%	29.4%	51.4%	27.8%	22.9%	14.7%	20.2%	**48.6%**	38.0%
r	(90/109)	(32/109)	(56/109)	(30/109)	(25/109)	(16/109)	(22/109)	**(53/109)**	(41/109)
A m	4.0 ± 0.8	3.3 ± 1.1	3.6 ± 0.9	2.5 ± 1.1	2.3 ± 1.0	2.3 ± 0.9	2.4 ± 0.9	**3.0 ± 1.2**	2.8 ± 1.1
p	77.7%	43.3%	60.6%	20.7%	12.8%	10.0%	12.8%	**34.4%**	23.9%
r	(139/179)	(78/180)	(109/180)	(37/179)	(23/179)	(18/180)	(23/180)	**(62/180)**	(43/180)
T m	4.0 ± 0.7	3.2 ± 1.0	3.6 ± 0.8	2.6 ± 1.1	2.3 ± 1.1	2.3 ± 0.9	2.5 ± 1.0	**3.1 ± 1.1**	2.8 ± 1.1
p	79.6%	37.9%	56.9%	23.3%	16.7%	11.7%	15.5%	**40.0%**	29.1%
r	(230/289)	(110/290)	(165/290)	(67/288)	(48/288)	(34/290)	(45/290)	**(116/290)**	(84/289)

Item no.	10	11	12	**13**	14	**15**	16	**17**
R m	3.6 ± 0.8	2.8 ± 1.1	2.9 ± 1.0	**3.7 ± 0.8**	3.4 ± 0.9	**3.9 ± 0.7**	3.4 ± 0.7	**2.5 ± 1.1**
p	66.4%	31.2%	28.4%	**69.7%**	50.5%	**84.4%**	43.1%	**19.3%**
r	(71/109)	(34/109)	(31/109)	**(76/109)**	(55/109)	**(92/109)**	(47/109)	**(21/109)**
A m	3.7 ± 0.9	2.9 ± 1.1	3.1 ± 1.0	**3.3 ± 0.9**	3.3 ± 0.9	**3.7 ± 0.8**	3.5 ± 0.9	**2.8 ± 1.0**
p	64.8%	31.3%	37.2%	**42.5%**	38.5%	**67.8%**	51.7%	**21.8%**
r	(116/179)	(56/179)	(67/180)	**(76/179)**	(69/179)	**(122/180)**	(93/180)	**(39/179)**
T m	3.7 ± 0.9	2.9 ± 1.1	3.0 ± 1.0	**3.4 ± 0.9**	3.3 ± 0.9	**3.8 ± 0.8**	3.4 ± 0.8	**2.7 ± 1.0**
p	65.2%	31.5%	33.8%	**52.9%**	42.9%	**73.8%**	48.3%	**20.8%**
r	(187/287)	(91/289)	(98/290)	**(153/289)**	(124/289)	**(214/290)**	(140/290)	**(60/289)**

The item numbers 1–17 indicate the corresponding items on the questionnaire. The mean scores are significantly different between residents and attending physicians on items 8, 13, 15, and 17 ($p < 0.05$).
A = attending physician; p = proportion of agreement; r = ratio of count; R = resident; T = total; m = mean score ± SD.

or 5 of the five-point scale) indicates an agreement to a "positive perception."

2.3. Analyses

Descriptive analyses were used to compute means, standard deviations, and also frequency and proportion of the agreement responses. The agreement responses of 4 or 5 in a five-point Likert Scale indicate a "positive" response to the question. Factor analysis with Varimax rotation with Kaiser normalization was used to explore the structure underlying the 17 items reflective of their satisfaction with the career, work, and lives. The Kaiser criterion was used to drop the least important factors from the analysis when eigenvalues <1.0. Internal consistency reliability was determined by employing Cronbach alpha.

Table 3 Score comparison between attending physicians and residents.

	Effect			Error			*F*	*p*
	SS	df	MS	SS	df	MS		
1	0.13	1	0.13	159.65	286	0.56	0.23	0.63
2	2.08	1	2.08	272.28	287	0.95	2.19	0.14
3	0	1	0	199.44	287	0.69	0	0.97
4	0.66	1	0.66	365.77	285	1.28	0.51	0.47
5	1.8	1	1.8	341.86	286	1.2	1.51	0.22
6	0.86	1	0.86	254.22	287	0.89	0.98	0.32
7	2.06	1	2.06	266.15	287	0.93	2.22	0.14
8*	9.14	1	9.14	367.32	287	1.28	7.14	0.01
9	3.45	1	3.45	341.21	286	1.19	2.89	0.09
10	0.06	1	0.06	213.71	284	0.75	0.09	0.77
11	0.1	1	0.1	348.88	286	1.22	0.08	0.77
12	3.66	1	3.66	276.33	287	0.96	3.8	0.05
13*	13.44	1	13.44	215.78	286	0.75	17.82	0.00
14	0.96	1	0.96	211.76	286	0.74	1.3	0.26
15*	3.71	1	3.71	172.65	287	0.6	6.17	0.01
16	0.35	1	0.35	178.84	287	0.62	0.57	0.45
17*	6.69	1	6.69	301.64	286	1.05	6.34	0.01

*Item scores significantly different between attending physicians and residents ($p < 0.05$). df: degree of freedom; MS: mean of square; SS: sum of square.

3. Results

Table 2 contains a summary of the descriptive data of the pediatricians' perceptions on the 17 question items on their work satisfaction, commitment and life quality. On only five out of the 17 items did more than one-half of the participants have positive perceptions toward their careers in Pediatrics. None of the 17 items had a "positive response" when mean score $\geq$4 was considered positive. The items perceived as worst (4–7 and 17) were on self-care and financial benefits. Regarding the score comparison between attending physicians and residents (Table 3), on items 8 (staying with the job), 13 (having support), and 15 (personal growth), residents scored significantly higher than the attending physicians, while residents scored lower on item 17 (being wealthy). Cronbach alpha (standardized) was 0.85, which is considered satisfactory.

Factor analysis identified five factors, which accounted for 66.97% of the variance (Table 4). The five factors were commitment of medical care, self-care, benefit, work environment, and job satisfaction. The mean scores of factors ranged from 3.59 $\pm$ 0.91 (factor 1) to 2.43 $\pm$ 1.04 (factor 2), which were all considered negative. Figure 1 is a scree plot of the eigenvalues plotted against the factor numbers. There were five factors with eigenvalues >1, and most of the variance is accounted for factor 1 ("medical career" of 29.42%). The reliability alphas of the five factors are fair to good, ranging from 0.85 to 0.60. The item variance within eight factors ranged from 2.06 to 1.94.

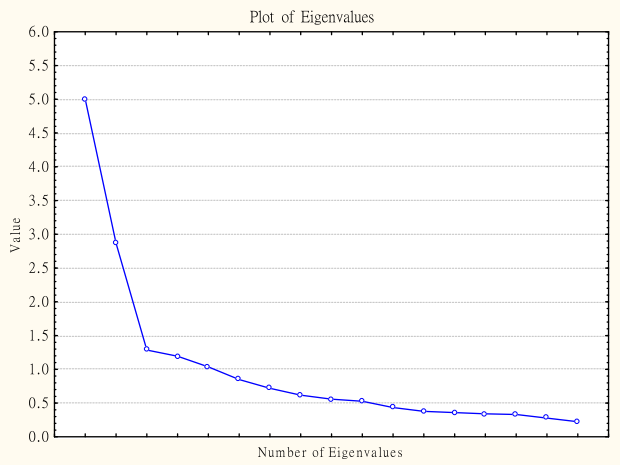

Figure 1 Scree plot of Eigenvalue loadings underlying the five extracted factors.

The descriptive summary of factors reveals that all factors were perceived as negative by pediatrics. The worst

Table 4 Structure of factor loadings (Varimax normalized).

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	0.51	0.01	−0.04	0.47	0.29
2	0.81	−0.02	0.15	0.01	0.13
3	0.84	−0.01	0.06	0.29	−0.02
4	0.08	0.75	0.03	0.14	0.05
5	−0.06	0.82	−0.01	0.08	0.17
6	−0.07	0.86	0.10	0.01	0.16
7	0.03	0.80	0.05	0.05	0.31
8	0.13	0.21	−0.16	0.34	0.74
9	0.09	0.27	0.14	0.14	0.79
10	0.12	0.09	0.01	0.65	0.02
11	0.05	0.21	0.24	−0.06	0.67
12	0.32	0.15	0.69	0.23	0.08
13	0.08	0.10	0.17	0.73	0.08
14	−0.04	0.12	0.20	0.78	0.15
15	0.43	0.02	0.06	0.67	0.06
16	0.30	−0.09	0.47	0.58	0.10
17	−0.05	0.03	0.85	0.14	0.11
Expl.Var	2.06	2.84	1.64	2.91	1.94
Prp.Totl	0.12	0.17	0.10	0.17	0.11
Eigenvalue	5.00	2.87	1.29	1.19	1.04
Total variance (%)	29.42	16.87	7.57	7.02	6.09
Cumulative (%)	29.42	46.28	53.85	60.87	66.97
Mean	3.59	2.43	2.84	3.55	2.95
Standard deviation	0.91	1.04	1.02	0.85	1.12
Agreement (%)	58.1%	16.8%	27.3%	57.7%	33.6%
Total number	(505/869)	(194/1152)	(158/579)	(665/1152)	(291/865)
Reliability alpha	0.72	0.85	0.60	0.75	0.72

Extraction: principal components (marked loadings are >500000).
Factor 1 = medical care; Factor 2 = self-care; Factor 3 = benefit; Factor 4 = work environment; Factor 5 = job satisfaction. Expl. Var: Explored variance calculated as sum of loadings of all factors; Prp. Totl: total proportion calculated as Expl.Var. value divided by number of variables. Agreement % = the proportion of response 4 or 5.

factor was self-care (factor 2), followed by benefit (factor 3). Only 33.6% indicated satisfaction with their jobs. About 60% of the pediatricians liked their medical career and work environment.

4. Discussion

Whenever a physician shortage emerges, the work environment for physicians who take care of hospitalized patients suffers the most. These physicians are expected to provide safe care equally, day and night, for hospitalized patients. When the physician workforce is reduced, their workloads and frequency of working night shifts increase. This study thus selected an in-hospital group to probe their perceptions. The study results found that pediatricians who worked in Taiwan generally had poor self-care, being too busy to maintain health, or manage personal issues and interpersonal relationships. As medical professionals, only slightly more than one-half of the pediatricians liked their medical career and work environment. Pediatricians were not satisfied with their jobs, and they did not find the benefits to match their efforts. These findings may be explained by the manpower shortage, in addition to the fast-paced, revenue-oriented, and resource-restricted healthcare system in Taiwan.

4.1. Pediatrician shortage

Based on calculations using a physician manpower prediction model,[8] the physician density deficit in Taiwan is in the top four out of 131 countries. The manpower shortage is especially severe in the pediatric speciality, which has been a critical problem for child healthcare in Taiwan for a long time. As early as 2008, the Child Welfare League Foundation reported three problems with the pediatric healthcare in Taiwan[9]: (1) the shortage and maldistribution of pediatrician manpower, (2) insufficient financial resources in providing quality healthcare to children, and (3) the lack of a friendly healthcare environment for children. The report indicated that each pediatrician took care of 1861 children, which was 36% more than the average patient load of 1368 for specialists overall. Solutions to combat the manpower shortage may include motivating young physicians to join the pediatric discipline, or incorporating and educating other pediatrics-related medical subspecialists to provide proper care in some degree to children.

4.2. Harm to patients and medical quality

In pediatrics, patient care with safety considerations is the care delivered to all children who visit, stay in, or are born in a hospital, day and night, attended by healthcare providers under reasonable workloads. The manpower shortage will increase physicians' workloads, resulting in long working hours and sleep deprivation, which may cause fatigue. Fatigue is closely linked to poor human performance and medical errors.[10] All the above problems will surely threaten patient safety and greatly affect the disease outcomes for children. As a result, patients will experience undesired health consequences later.

4.3. Physician wellbeing

Increased workloads combined with sleep deprivation will affect physicians' physical and mental wellness, and they may lead to burnout. It was reported that extended working shifts increased the risk of needle-stick injuries[11] and motor vehicle crashes.[12] Burnout is defined by three components: emotional exhaustion, depersonalization toward clients, and a reduced sense of personal accomplishment at work.[13] Emotional exhaustion can leave one with low energy, depersonalization reduces compassion, and finding little personal accomplishment leads to decreased work satisfaction. Burnout can be manifested in the form of mental health problems, physical ailments, and illness. Finally, physicians may leave their jobs, or even abandon their careers entirely. In this study, the majority of pediatricians, especially the attending physicians, stated they were thinking of quitting their jobs.

4.4. Learning and supervision

Residents were both workers and learners who learn by providing medical services to patients. The appropriate relationship between patient services, clinical loadings, and medical education has been long-debated and remains controversial.[14,15] However, significant fatigue and burnout surely affect the effectiveness of learning. Based on the Hanley study[16] on the relationship between workloads and learning, a theoretical model of a parabolic curve indicated there is an optimal patient load, where resident learning is maximized. Learning is reduced when residents have either too few patients or too many patients. The effectiveness of learning, associated with pediatrician clinical competency, would affect not only the quality of patient care but also physicians' commitment to work.

The physician shortage is now a global concern, and there is no quick fix whenever a shortage emerges. Early detection of physician shortages has been widely considered important, though challenging. Soon after 2000, when the physician supply was considered to exceed demand,[17] physician shortages emerged in the United States and Canada,[18] and similarly in Japan,[19,20] Australia, and Singapore.[21] In past crises, correction of the physician shortage within a country has taken an extended period of time, e.g., nearly 25 years in the United States. Currently in Taiwan, physician manpower is considered adequate, but mal-distributed. This study provides data on the problems of pediatrician wellness and their commitment to jobs, which should draw immediate attention for resolution.

5. Conclusion

Currently, Taiwanese pediatricians are not satisfied with their jobs, having low commitment, poor self-care, and little wellbeing. This study provides evidence that explains the reducing numbers of young pediatricians and reveals the consequences of the physician shortage in Taiwan.

6. Limitations

This study used a convenience sample wherein the volunteer participants were enrolled in response to a public

invitation from the authors and the Taiwan Pediatric Association. Therefore, the research results may not represent the perceptions of all the pediatricians who worked in hospitals.

Ethics approval

The study received ethics approval from the Institutional Review Board of E-Da Hospital, Kaohsiung, Taiwan. The file number is EMRP-100-052.

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