



French pediatric nephrologists are in crisis: the consequences of paradoxical injunctions and a plea for action

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French pediatrics, whether inside or outside the public Hospital, is in crisis: lack of beds, transfers of children, degraded procedures, deprogramming of “non-urgent” care, child psychiatry in distress, etc. The 2021 report from l’Inspection Générale de Santé (IGAS) called “Pediatrics and the organization of child health care in France” already illustrated the structural crisis of this discipline, notably its demographic decline in terms of pediatrician density (French pediatricians ranking at 22nd place from the OECD with 73.9 pediatricians for 100,000 children less than 15 years in 2020), the result of a *numerus clausus* policy (i.e., the political decision made in the early 1970s to strictly control and limit the number of future doctors relative to France’s anticipated demographic needs), that anticipated neither the feminization of

the profession nor the aspirations and working methods of new generations. The extended working hours (including nights and weekends), the important responsibilities (moral responsibility and societal pressure on children’s health), and the active participation in the continuity of care make pediatrics less and less attractive, especially since it is one of the least well-paid specialties in France. When assessing attractiveness by the rank of the last medical student who chooses pediatrics at the end of the sixth year of medical school, the choice of pediatrics has decreased from the first 54% in 2010 to 71% in 2020 [1]. One used to become and still becomes a pediatrician by passion and vocation.

In parallel to this professional over-investment, European law is nevertheless crystal clear: no more than 48 h of work per week for a physician (i.e., 37% more than the maximal legal time for employees by French law). The feeling of pediatricians working in public hospitals is often that the 48 h-week represents an unattainable dream. Professional burnouts do not spare pediatricians [2, 3], especially since perfectionism, often recognized as a hallmark of pediatricians, is a classic risk factor [4]. Moreover, the prevalence of burnouts among physicians is increasing worldwide [5, 6].

The “Assises de la Pédiatrie et de la Santé de l’Enfant” was officially launched on December 7, 2022, by the French Health Ministry to cover a wide range of subjects allowing for a sustainable evolution of children’s care and health. Results are still pending; however, the quality of life at work of pediatricians does not appear to be a primary objective of this initiative. Within the Department of Pediatrics of the Hôpital Femme Mère Enfant of the Hospices Civils de Lyon (i.e., the second largest university hospital in France), the governance of the pediatric department has previously decided to carry out a survey during the summer of 2022 on the quality of life at work and the working time of physicians, whatever their status (“juniors” = interns; “seniors” = physicians who have full responsibility to prescribe under their own name, and to take night shifts and calls,

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i.e., assistant specialists, clinical instructors, consultants, and university lecturers and professors) or their discipline (pediatricians, pediatric surgeons, pedopsychiatrists, and pediatric anesthesiologists), in conjunction with the management of our hospital group and the occupational health department. An anonymous, declarative questionnaire was designed by pediatrician members of the Steering Committee on Quality of Life at Work and representatives of the occupational medicine department. In total, 59 questionnaires were analyzed for senior pediatricians (70% women and 30% part-time), showing that the 75th percentile of weekly working hours was 62 h. In total, 44% had signs of anxiety (10% moderate and 5% severe) and 44% had signs of depression (10% moderate and 3% severe) [7].

Here, we aimed to assess the quality of life at work and the working time of French pediatric nephrologists, using a similar methodology. The council of the French Society of Pediatric Nephrology and the researcher from the Unité Mixte de Recherche Epidémiologique et de Surveillance Transport Travail Environnement already involved in the first analysis adapted this questionnaire for French pediatric nephrologists, notably taking into account the on-call system that can be very different among French centers and the possibility per center to perform peritoneal dialysis (PD), hemodialysis (HD) in autonomy or with adult centers or with pediatric intensive care units, and/or kidney transplantation. Thus, an anonymous declarative questionnaire was sent through the mailing list of the French Society of Pediatric Nephrology in January 2023. The results were processed anonymously and confidentially.

The first part of the questionnaire aimed to better describe the studied population: position, workload, age group, gender, estimated general weekly working time over the last week and the previous week, compliance with safety rest, number of days of weekends worked, half-shifts until midnight, full night shifts and on-call nights over the last 6 months, number of trips outside the city of origin and number of nights away from home for work-related travel over the last 6 months, implementation of working at home, questions around work-related emails (availability on the personal cell phone, reading emails on non-work days, and setting up absence messages on non-work days and weekends), questions about annual leave (ease of taking it), questions about “disconnection” (general feeling, social networks in the department, induced mental load), workload (clinical, hospital administrative, teaching, research, and general interest activities), and quality of life at work (dedicated office and surface area, number of doctors per office, length of lunch break, and history of occupational medicine visits in the last 3 years). The second part of the questionnaire was proposed by the occupational medicine department and allowed the evaluation of occupational stress through the Job Content Questionnaire (JCQ) [8], anxiety symptoms with the

GAD-7 [9], depression with the PHQ-9 [10], global health status, job satisfaction, and verbal and physical aggression from the public and from colleagues or a superior (questions from the Sumer survey) [11]. It was the same questionnaire as the one proposed to the pediatricians in the previous survey [7]. Lastly, the final section was dedicated to free comments. The Supplemental Appendix corresponds to a translated version of the survey.

As in most countries, pediatric nephrology is a small subspecialty of pediatrics in France, mainly practiced in university and general hospitals. There are 99 active pediatric nephrologists, with around 40 in training; however, although we do not have exact figures, many pediatric nephrologists in training will not eventually practice pediatric nephrology. There are 28 university centers practicing pediatric nephrology, 16 of which offer a transplantation program, 11 peritoneal dialysis, and 17 both hemodialysis and peritoneal dialysis. In terms of training, in France, there are 6 years of medical school, followed by a national competitive examination to choose the city and specialty for internship training. The pediatric internship lasts 4 years, followed by a 1-year fellowship (also called “junior doctor”); thereafter, the clinical instructor position lasts between 2 and 4 years and it is used to validate clinical practice in pediatric nephrology. It should be noted that there is no legal recognition of the pediatric nephrology sub-specialty (a pediatric nephrologist, in the eyes of the law, is “simply” a pediatrician). The French Society of Pediatric Nephrology strongly encourages young people to take the French Diploma of Pediatric Nephrology that is organized by the society to validate theoretical knowledge. We also encourage young people to follow the ERKNEt curriculum for rare kidney disease training and to take the annual exam organized by the European Society for Pediatric Nephrology. In terms of compensation and work hours as compared to other specialties; unfortunately, there are no official numbers, but there is a wide heterogeneity in the recognition of on call duties, some centers being on call without any compensation, while others are financially recognized (with a factor 5 between centers). The number of faculty pediatric nephrologists is steadily declining, with only 8 full-time professors and 2 associate professors in the whole country; this is particularly worrying, especially as French academics in general are expressing concerns on their current status and future, particularly in terms of managerial and administrative constraints [12]. The gradual loss of academic clinician scientists, who were recently described as “an endangered species,” adds to the worries, since such positions are necessary not only for the evolution of medical and scientific knowledge but also for the training of younger colleagues, while being less and less attractive [13].

In total, 50 questionnaires were analyzed (out of 99 members). Among the respondents, 62% were women and 22% worked part-time; Table 1 summarizes the main

Table 1 General characteristics of the French pediatric nephrologists who replied to the survey

		Females <i>N</i> =36	Males <i>N</i> =14	<i>p</i>
Age group	30–34 years (%)	8	29	***
	35–39 years (%)	19	21	
	40–49 years (%)	50	21	
	50–59 years (%)	22	21	
	+60 years (%)	0	7	
Work-load	Full-time (%)	72	93	***
	Part-time (%)	28	7	
Position	Fellows and clinical instructors (%)	0	22	***
	Senior consultants (hospital position) (%)	92	64	
	Associate and full professors (hospital and university position) (%)	8	14	
Clinical activity NS	Only pediatric nephrology (%)	50	57	
	Unit dedicated only to pediatric nephrology (%)	33	29	
	Chronic peritoneal dialysis performed in the center (%)	89	57	
	Chronic hemodialysis performed in the center (%)	75	64	
	Renal transplantation performed in the center (%)	75	50	
Home-working	24/7 on-call line for pediatric nephrology (%)	84	57	
	Every day in addition to the clinical activity (%)	67	50	*
	Sometimes in addition to the clinical activity (%)	22	29	
Disconnection	Never (%)	11	21	
	Consultation of professional emails on non-working days (%) NS			
	Every day	33	43	
	Few times per day	33	7	
	Professional mails on the personal cell (%) NS	75	64	
	Systematic absence message on the email on non-working days (%) NS	8	14	
	Ability to feel “disconnected” during vacation time (%) NS	67	71	
	WhatsApp group of the clinical unit (%) NS	78	64	
	If WhatsApp group, feeling of additional mental load (%) NS	33	27	
	Ability to have the total vacation time for the year (%)	25	79	***
Impact of work on quality of life	Difficulty in setting up vacation time (%) NS	42	14	
	I never have a 30-min break for lunch at work (%) NS	22	21	
	I always have a 30-min break for lunch at work (%)	28	43	
	My work does not influence my health (%)	11	36	***
	My work influences my health, in a good way (%)	14	14	
	My work influences my health, in a bad way (%)	75	50	
	I am globally satisfied of my job (%) NS	73	93	
Within the last 12 months, I have been victim at work of verbal assault (%)	58	36	***	
Within the last 12 months, I have been victim at work of physical assault (%) NA	3	0		

Chi-squared test or Fisher’s exact test: *NA*, not applicable; *NS*, not significant. * <0.5, ** <0.01, and *** <0.001

characteristics of the responders. French pediatric nephrologists work an average of 61 h per week. However, even though almost 25% of the respondents were officially working part-time, the 75th percentile of weekly working hours was 66 h. Despite the clear law on safety rest after night shifts, 14% of respondents did not take their safety rest after night shifts. Of note, over the last 6 months, 28% of respondents had worked more than 15 days of weekends and 68% of respondents had more than 21 on-call nights. Of note, 4% of respondents had an unpaid 24/7 on-call line for

pediatric nephrology, and this concerned only women pediatric nephrologists. In total, 68% declared that their work was rather bad for their own health. From the analysis of the JCQ, GAD-7, and PHQ-9 questionnaires, the researcher from the occupational medicine department found that 48% of respondents had signs of anxiety (10% moderate and 4% severe) and 44% signs of depression (24% moderate and 2% severe). Of note, when sending the questionnaire, we stated that if this survey raises any issues or questions about the respondent’s practice, he or she should not hesitate to

let us know; we did not receive any feedback. We did not label respondents as burnout or non-burnout physicians. Even though mostly statistically non-significant, there are different trends between women and men: indeed, women pediatric nephrologists work more often part-time, but seem to have more busy days (i.e., no or limited lunch breaks) and difficulties in “disconnecting,” with a general feeling of harmful impact of work on their own health. These gender differences obviously deserve more study but may be an additional factor to take into account for the future, when we have more and more women in pediatric nephrology. Organizational culture factors, such as the lack of women in leadership positions, income inequalities, lower rates of career advancement and academic promotion, gender bias, verbal attacks, and sometimes sexual harassment, play a crucial role in gender disparities in burnout [14]. Disproportionate responsibilities outside of work, including childcare and eldercare, can also contribute to less satisfaction with work-life integration [14]. One may argue that only the physicians experiencing more difficulties were motivated to share their concerns and respond to the survey, but we had a 50% response rate, which seems significant for a survey of this type.

Another study explored prevalence, severity, and predisposing factors to burnout syndrome among Polish pediatric nephrologists: among the 97 physicians who answered the questionnaire, high level of emotional exhaustion, depersonalization, and reduced feeling of personal accomplishments were observed in 39%, 38%, and 22% of participants, respectively; almost 8% of respondents presented high three-dimensional burnout. Identified risk factors were excessive bureaucracy, rush at work, and overtime work [15], all risk factors that we also observe here. Another risk factor, less explored in pediatric nephrology, could be compassion fatigue, namely, the result of repeated vicarious trauma from caring. Indeed, a recent review highlighted that even though pediatric nephrologists can have immense personal and professional satisfaction, still, the emotional toll of the work can be heavy, especially when combining the number of cases over a long period of time [16]. In 2022, the American SUPERPOWER study from the Sustainable Pediatric Nephrology Workforce Project aimed to assess burnout rates both in pediatric nephrology fellows and faculties: the overall response rate was also important for a survey (85%), including 30 fellows and 86 faculty members [17]. The prevalence of burnout was 13 and 16%, respectively. Demographic (age, gender, year of training, faculty rank, and marital status) and program factors (fellowship size, faculty size, current block/rotation, and vacation or weekend off timing) were not significantly associated with burnout. Burnout was associated with significant impaired quality of life, increased perceived stress, lower satisfaction with career choice and work-life

balance, lower institutional support for wellness programs, and lower satisfaction with colleagues [17].

In addition to these data on burnout and impaired work quality of life, this is not the first time that warnings have been sent on the workforce crisis in pediatric nephrology. In 2016, a survey was performed by the International Pediatric Nephrology Association (IPNA) on the global pediatric nephrology workforce: from 341 responses (71 countries), it highlighted that there was a high degree of overall perceived workforce inadequacy with 67% of all respondents reporting some degree of shortage, with regional variability since it ranged from 20% in Australia/New Zealand to 100% in Africa. Respondents from Africa (25%) and North America (22%) reported the greatest difficulty recruiting fellows. Low trainee interest, low salary, lack of government or institutional support, and few available jobs in pediatric nephrology were the most frequently reported obstacles to fellow recruitment and job availability [18], on top of persistent huge medical disparities between developing and developed countries, as illustrated recently with the cystinosis model [19]. Even though the survey took place before the COVID crisis [20], most of these factors are still relevant. In 2021, American colleagues showed a clear association between the proportion of unfilled fellowship positions (reaching almost 50% in pediatric nephrology!) and sub-specialty income [21]; they proposed a detailed review of all factors explaining such a scarcity of pediatric nephrologists, with 4 main topics: (1) trainee education and exposure, (2) reimbursement and policy issues, (3) fellowship training duration, and (4) retention, burnout, and professional well-being. If we need to work on attractivity for the next generation, we also need to keep trained pediatric nephrologists in the medical system. As such, solutions to optimize physician well-being should be implemented at multiple levels: individual, programmatic, and institutional. Wellness leadership interventions have proved to be helpful [22], and the ESPN has recently launched the Stream Physician Resilience Program in that regard. That said, if we face a workforce crisis in an environment in which work regulation is not respected, with low salaries as compared to other pediatric sub-specialties, we will soon have to face major problems, especially since trainee expectations change over time [23].

In conclusion, French pediatric nephrologists work an average of 61 h per week, despite a crystal-clear European law (48 h per week, maximum). Strong signals must be sent about the quality of working life and working hours of pediatric nephrologists if we want to obtain a strong and ambitious pediatric service in nephrology and if we want to continue our mission of caring for all children in due time without exhausting healthcare providers. This problem goes far beyond France and the US, and it may be time that IPNA gets involved in this topic for the future of our sub-specialty.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s00467-024-06337-1>.

Data Availability The datasets generated during and/or analyzed during the current study are not publicly available due to confidential data, but are available from the corresponding author on reasonable request.

Declarations

Conflict of interest The authors declare no competing interests.

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