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PEDIATRIC SURGERY IN BRAZIL: BITTERSWEET

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ABSTRACTS

INTRODUCTION: Brazil is a low-medium income country with a big territory, characterized by inequalities in population distribution and social development towards the country, affecting the distribution of physicians and medical technology resources. Circa 80% of the population depends on the National Health System (SUS), which is the main employer for physicians. This study aims to describe working conditions, quality of life and professional expectations of BPS.

METHODS: electronic survey with Brazilian pediatric surgeons.

RESULTS: Females predominate in the younger and males in the older age groups. Most BPS are married, with a minority being single (n=38, 10.86%) or divorced (n=31, 8.86%) and most have children. For a quarter of BPS the profession/specialty influenced their decisions concerning family planning. Multiple jobs are common, including BPS that declare themselves half-retired. The geographic distribution of pediatric surgeons is unequal. Only a quarter of BPS work in the mid-center, northern and northern-eastern regions, where almost half of the country population live. Medical technology is inadequately distributed. The main income for most BPS comes from SUS. Most BPS were trained in fellowships. Most BPS are satisfied with their specialty choice (n=255, 72.86%), but many judge the future of Pediatric surgery in Brazil as unfavorable (n=130, 37.14%). Childless females represent 29.78%, versus 6.4% of the males (p<0.00001) and more females than males restrict their families to one child (p=0.00001). 42.7% of the women (n=76) admitted that work has deeply influenced family planning. Age of the first child tended to be higher for women.

DISCUSSION: Research about the professional realities and perspectives is important to plan the future of the specialty. Professional expectations and real-life problems cannot be directly transferred between different economic and social environments. Our data suggest that females will largely predominate among pediatric surgeons in Brazil in the near future. Multiple jobs and big workloads are related to attrition, burn out, disillusionment, and lower productivity. The relative low number of BPS that are satisfied with their professional choices, and, especially, the high proportion of BPS that predict an unfavorable future for Pediatric Surgery in Brazil are worrying, especially as disillusionment predominates among the younger

BPS. The main complaints registered in this research were related to low wages, low prestige of the specialty, and unrestrained competition among colleagues, that may be obviously related.

KEY-WORDS: Pediatric Surgery, work-life balance, women surgeons, Brazil, Latin America, LMIC

INTRODUCTION

Brazil is a LMIC located in Latin America, has a big territory (the fifth country in the world concerning extension and 7th in population, 213,317,639) ¹, and is characterized by extreme differences in population distribution (mostly concentrated in the south-eastern - se - and southern - so - regions), social development and physical geography between the various regions of the country. Some regions are highly urban and densely populated, while others are rural or dominated by the Amazon forest, typically with smaller populations. In rural, mid-center (mc) and northern (no) provinces transportation may be difficult, roads may be unavailable and fluvial transportation is frequently the only way to leave the cities/villages. This directly affects the distribution of physicians and medical technology resources, and, consequently, the quality and availability of health access to the population, including primary health such as pre-natal care and sophisticated surgical care, such as pediatric surgery and anesthesia. Abortion for malformations is illegal, except for anencephalic fetuses, and the incidence of live-born babies with severe congenital malformations is proportionately high, despite a present tendency of lower parity per woman (1.76/woman at present versus 2.04 in 2006) ².

While the country is the 6th world economy, distribution of wealth is extremely unequal. Per capita GDP is 6,794.5 US dollars (USD) ³, but the country's minimum salary, that represents the monthly income for almost half of the Brazilians, is only 266 USD/month ⁴. Circa 80% of the population (circa 170 million people) depends on the National Health System (SUS) that is free for any Brazilian, for health assistance ⁵. SUS is the main employer for physicians in the country. The health private market is highly competitive and dominated by health insurance companies, working mainly with fee-for-service pre-determined payments.

Organized Pediatric Surgery departments and services in Brazil date from the 1960's. The Brazilian Association of Pediatric Surgery (CIPE) was founded in 1964. Pioneer Brazilian Pediatric Surgeons (BPS) were mostly trained in North America or Europe. Training by informal mentorship was common, but the country now offers many high-quality fellowship programs.

The specificities concerning the work of BPS in Brazil have been rarely studied ⁵⁻⁹. This study aims to describe the contemporaneous working environment, quality of life and professional expectations of BPS.

METHODS

A non-validated questionnaire was designed by the researchers and sent to BPS on behalf of CIPE, using the association's electronic mail and two professional WhatsApp® groups used for discussion of clinical cases. Google-form® (Microsoft Inc) was used to assess the questionnaire and to register the responses, which were anonymous. Data were anonymously registered and analyzed using Excel® software (Microsoft Inc). The questionnaire was sent 3 times in weekly

intervals and was available online for data inclusion for one month (March 2023). No financial compensation was offered. Time to fill the questionnaire was approximately 10 minutes.

A personal informed consent form for data analysis and publication was included in the introduction to the questionnaire. The investigated surgeons were informed about the purpose of the research (to obtain a panel of the present situation and professional perspectives of Pediatric Surgeons in Brazil).

Institutional ethics committee permission was waived, as the research did not involve patients and each individual consented to the analysis and publication of their anonymized data when agreeing to fill the questionnaire.

Descriptive and comparative statistical analysis was used. Categorical variables were analyzed with chi-square tests wherever applicable, with $p < 0.05$ for significant differences.

RESULTS

General data

The questionnaire was completed by 351 BPS (30.52% of the 1,150 BPS registered by CIPE). One was excluded (because less than 10% of the responses were filled up). 178 (50.86%) were women and 172 men (49.14%), comparable to CIPE registered members proportion (53% females). No BPS declared other genders. Age distribution was balanced from the fourth to the sixth life decades. Only 3 BPS were ≤ 30 years-old. Older than 70 years-old BPS were 7.71% of the cohort ($n=27$) (this age range represents 5.3% of CIPE associates). Females predominate in the younger and males in the older age groups. There is only one female in the > 70 years-old age group (Figure 1).

Most BPS are married ($n=281$, 80%), with a minority being single ($n=38$, 10.86%) or divorced ($n=31$, 8.86%) and most have children (Table 2). For a quarter of BPS the profession/specialty influenced their decisions concerning family planning ($n=96$, 26.86%).

Most BPS operate on children ($n=341$, 97.43%), including those > 70 years-old ($n=25$, 92.59%), and BPS that declared themselves retired, 32/34 (94.12%) partially retired, opting for a lower number of jobs or working exclusively as private physicians ($n=10$, 29.41%). However, 17 semi-retired BPS still hold > 1 job ($n=17$, 50%). As expected, a comparison between semi-retired and active BPS shows that less semi-retired physicians hold > 2 jobs (80.79% versus 22.58%, $p=0.00008$).

Most BPS work as medical educators, mostly involved with fellows and interns training ($n=201$, 57.43%). A lower proportion are active as researchers ($n=64$, 18.28%) or managers ($n=68$, 19.43%), concurrently with their duties as surgeons. Most BPS hold multiple simultaneous jobs: 89 (25.43%), 61 (14.43%) and 42 (12%) have, respectively, 3, 4, or > 4 simultaneous jobs. Only a third of BPS (136, 38.85%) hold 1-2 jobs, 41 (11.71%) holding 1 and 95 (27.14%) holding 2 jobs.

The geographic distribution of pediatric surgeons is unequal in Brazil. Roughly 3/4 of BPS ($n=262$, 74.86%) work in the se-so ($n=179$, 51.14% se and $n=83$, 23.71% so), where 57.33% of

the country population live. Fifty-five surgeons (15.71%) work in the ne, 20 (4.71%) in the mc and 10 in no (n=10, 2.86%). The population distribution in the country is 7.4%, 28.42%, 42.44%, 14.84% and 6.83% respectively in the no, ne, se, so and mc regions¹⁰. Importantly, 16/20 (80%) BPS in the mc region work in Brasilia, the country's capital. Four surgeons (1.14%) declared to work in 2 different Brazilian provinces simultaneously (2 alternate work in se-ne, mc-se provinces while 2 other work in adjacent so and ne cities).

Most SUS units are general hospitals (n=159, 42.43%), versus 102 (29.14%) pediatric hospitals. The proportion of pediatric specialized hospitals was different among private institutions: 227 (64.86%) general hospitals versus 203 (58%) pediatric institutions. 203 (58%) BPS hold a private medical office.

BPS operate on day clinic (n=238, 68%), general surgery (n=336, 96%), urological (n=270, 77.14%), oncological (n=183, 55.28%), emergency (n=292, 85.43%) and neonatal (n=304, 86.86%) cases. Only a fifth (n=68, 19.43%) do fetal counselling, and 10.57% are involved with fetal surgery (n=37).

The availability of CT (n=331, 94.57%), videosurgery (n=305, 84.14%), PICU (n=333, 95.14%), NICU (n=313, 89.43%) and urgency services (n=295, 84.29%) is almost universal. Other needs, however, are inadequately distributed, such as US 24/7 (n=204, 58.29%), MRI (n=210, 60%), endourology (n=191, 54.57%), contrast exams (n=269, 76.86%), pathologists (n=268, 76.57%), and maternity services (n=270, 77.14%), and some are frankly insufficient, such as nuclear medicine for diagnosis (n=137, 39.14%), frozen specimens examinations (n=208, 59.43%), pediatric anesthesiologists (n=226, 64.57%), and pediatric radiologists (n=123, 35.14%). Robotic surgery is available for 60 BPS (17.14%). Pediatric Surgery services are connected to maternities in 239 (68.29%) departments.

Most BPS work in institutions attended by medical students (n=243, 69.43%), interns (n=255, 72.86%), general surgery residents (n=270, 77.14%), Pediatrics residents (n=246, 70.29%), and/or general urology residents (n=97, 27.71%). Circa half of the BPS work in institutions involved in pediatric surgery training, either fellowships (n=170, 48.57%), post-graduations (n=51, 14.57%) or sub-specialization (n=41, 11.71%).

The major employer for pediatric surgeons in Brazil is SUS (n=304, 88.65%). In the second place come private activities (n=256, 73.14%). Salaried physicians working for private institutions (n=162, 46.29%) come next. Working as auditors for health insurance companies (n=7, 2%) and legal experts (n=8, 2.29%) is relatively uncommon. 123 BPS (35.14%) have a job as a professor of Pediatric Surgery and 34 (9.71%) are retired (most partially). The main income for most BPS come from SUS (n=186, 53.14%) or private activities (n=109, 31.14%) (Table 1).

Approximately a third of BPS (n=115, 32.85%) work as physicians in non-Pediatric Surgery jobs, mainly as emergency doctors (n=16, 4.75%), and as professors in other medical specialties (general surgery, pediatrics and anatomy)(n=25, 7.14%). Other work as Pediatricians (n=13, 3.71%), auditors for health insurance companies, managers not exclusively associated to Pediatric surgery (n=25, 7.14%), or to the military (n=12, 3.43%). Non-medical jobs are uncommon (n=25, 7.14%).

In Brazil any kind of medical practice is allowed for physicians graduated by a certified university with their diplomas ratified by the Brazilian Medical Council (CFM). There is no requirement for periodic recertification or a mandatory age for retirement, except for public servants, including those working for SUS, at 75 years-old. Specialists are usually trained in certified fellowship programs, but training as post-graduates (not obliged to follow fellowship regulations) or informally, by mentorship with recognized specialists, is possible.

Ratification of Pediatric Surgeons expertise by CIPE is independent from graduating from a fellowship, and demands passing an independent examination managed by CIPE (Título de especialista – TE), that tests exclusively Pediatric Surgery topics. Candidates are either Pediatric Surgeons that have graduated from a Pediatric Surgery fellowship or Pediatric Surgeons trained with any other method, with at least 12 years of proved surgical practice. The candidate has to pay for the test (1500 Brazilian reais, circa 300 US dollars).

Most BPS were trained in fellowships (n=337, 96.27%). Only a few report have been trained in post-graduation courses (n=4, 1.14%) or informally by mentors (n=7, 2%). 198 BPS (56.57%) were approved in TE examination. Those not having a TE certificate (n=146) justified it as not being mandatory (n=55, 37.67%), too expensive (n=24, 16.44%), inadequate (n=39, 26.71%), unjust (n=31, 21.23%), embarrassing (n=41, 28.08%), or not a priority (n=8, 5.48%). Some (n=15, 10.27%) planned to enroll for the test in the future. Only 2 reported not having being approved in a previous test (1.37%).

Most BPS are satisfied with their specialty choice (n=255, 72.86%), with 11 (3.14%) being dissatisfied and 38 (10.86%) neutral. Despite those data, 20 (5.71%) consider trying another specialty and 24 (6.86%) plan to pursue a non-medical professional activity. Also, many judge the future of Pediatric surgery in Brazil as unfavorable (n=130, 37.14%), versus a similar proportion that thinks that the future of the specialty in the country is favorable (n=139, 39.71%)(n=82, 23.43% are neutral).

When asked to comment on ideas to improve Pediatric Surgery in Brazil the need for better payment was highlighted (n=84, 24%). Other important aspects were the need to build better relationships between colleagues (n=39, 11.14%), to value/market the specialty (n=45, 12.86%), and to get better results from CIPE administration (n=32, 9.14%). Others cited the need of better health public policies (n=15, 4.29%), continued education (n=16, 4.57%), and clinical support for the patients (n=16, 4.57%).

Gender issues

Gender distribution in the country is proportional to BPS regional distribution.

Our data suggest that proportionately more women are entering the specialty. Males are 68.02% among > 50 year-old surgeons (n=117), while females are 67.98% of the 20-50 BPS (n=121, p<0.00001)(figure 1). As expected, most retired physicians in our cohort are males (9 females versus 25 males, p=0.003). In what concerns task distribution, more men are involved in teaching and management (109 versus 92, p=0.03 and 117 versus 57, p=0.04, respectively), but there is no significant difference in the number of males and females Professors of Pediatric Surgery (68 men versus 55 women, p=0.09).

Females work more frequently in SUS than males (139 versus 165, $p=0.001$). Correspondingly, more women report SUS payments as their main income (80 males versus 106 females, $p=0.01$). Income from private offices is the main for 36.63% of males, as compared to 25.84% of females ($p=0.03$). Surprisingly, women tended to hold a higher number of jobs: 49.52% of men hold 1 or 2 jobs ($n=77$), versus 34.30% of the women ($n=59$, $p=0.006$).

Comparatively less females have been approved in CIPE's specialist examination (44.38% females versus 69.19% males, $p<0.00001$).

Females are single more frequently than males (0.58% versus 20.79%, $p<0.00001$). This has been demonstrated for all ages. Childless females represent 29.78% ($n=53$), versus 6.4% of the males ($n=11$, $p<0.00001$). A significant difference can also be proved when comparing the number of children between genders (1 child versus > 1 child): 128/131 males (95.42%) that are parents have > 1 child versus 69/125 (55.2%) females ($p=0.00001$). 42.7% of the women ($n=76$) admitted that work has deeply influenced family planning. This was also recognized by men in a much smaller proportion: 10.47% ($n=18$, $p<0.00001$). Almost a third of the females (30.34%) responded that the profession has impeded gestations or limited the number of children for biological reasons (15/178 and 39/178, respectively). Other 82 (46.07%) declared that they did not have time to dedicate to a largest family. For 9 (5.06%) work was their priority and for 12 (6.74%) other children would hinder their progression in the career. Twenty-two (12.36%) argued that their income was insufficient for them to raise more children, 23 (12.92%) said that they lacked a support network as mothers, 10 (5.62%) did not have children because they were single and 18 (10.11%) adopted their partner's children.

Age of the first child tended to be higher for women (table 1), especially from the younger age ranges and those from so-se regions.

Female BPS reported 30 spontaneous pregnancies (from 125 with at least 1 child, 24%) with obstetric complications. A total of 22 (17.6%) induced pregnancies were also declared (7 with ovulation inductors and 15 in vitro fertilizations – 2 using frozen eggs and 1 using ICSI technique). Six adoptions were also described.

Characteristics of the geographic distribution of BPS, a comparison between so-se and no-ne-mc regions of Brazil

Gender and age distribution were similar for BPS throughout the country.

Tasks exerted by BPS did not differ significantly between the various geographic distributions. There was, however, a tendency to concentrate research in so-se (20.45% versus 11.63% of BPS did some research in so-se and no-ne-mc, respectively, $p=0.07$). SUS was the main contractor in all regions, despite a higher predominance in the poorest geographic region (no-ne-mc): 85.23% versus 91.86% ($p=0.07$). Salaried work for private institutions was less common in no-ne-mc (36.05% versus 49.62%, $p=0.03$), while autonomous activities/office clients were more common in no-ne-mc: 83.72% versus 69.7% ($p=0.01$). Despite this, main income comes proportionally more from SUS for those working in no-ne-mc: 50% versus 62.79%, $p=0.04$). More BPS from so-se had some professional activity involving other specialties (35.48% versus 23.26%, $p=0.03$).

Having been approved in the TE examination is more common for those working in so-se (60.98% versus 40.02%, $p=0.002$).

BPS working at so-se tend less to assume sub-specialized tasks (figure 2). Despite a similar distribution of technology in a general sense (figure 3), BPS working in the richer regions have a better offer of pediatric radiologists (39.39% versus 22.09%), pathologists (82.2% versus 59.3%), nuclear medicine exams (45.83% versus 18.6%), MRI (67.8% versus 44.19%) and frozen specimens examinations (79.62% versus 36.05%)(Figure 3).

Despite the demonstrable differences between regions, the proportions of BPS satisfied with their professional choices and predicting a favorable future for pediatric surgery in Brazil did not differ.

Differences observed between older and younger BPS

Some very significant differences were observed in what concerns the working market. Working for SUS predominated more for the younger BPS (94.86% versus 78.74%, $p=0.00001$). Correspondingly, the main income for them also came from SUS (65.71% versus 40.8%, $p=0.00005$), while for the older generation it was more common to have the main income from private/office autonomous activities (19.43% versus 42.53%, $p<0.00001$). Administrative activities were assumed by a quarter of the older BPS (27.59%), versus 11.42% of the younger surgeons ($p=0.0001$).

As expected, there are more single BPS among the younger surgeons (17.14% versus 4.6%, $p=0.002$). As said before, there was only 1 single male in the cohort (age between 51-60 years-old). Among single females, only one was in the 20-30 years-old age range (19 were 31-40 years-old and the other distributed in the other age ranges). 41.71% of the 20-50 years-old BPS agreed that the profession influenced their family planning versus 4.6% of the > 50 years-old BPS ($p=0.00001$). 27.42% of the 20-50 years-old BPS were childless versus 9.2% of the > 50 years-old surgeons ($p=0.00001$). In a comparison between those that had an only child and those that had > 1 children 20-50 years-old BPS predominated (79.66% versus 63.69%, $p=0.004$). Interestingly, 17.71% among 20-50 years-old BPS declared that their age limited the number of children they had (versus 4.6% of the > 50 years-old BPS). Other differences were also seen when comparing the younger and the older generation of BPS concerning those that argued that they did not have time to dedicate to paternity/maternity (32.29% versus 8.62%), those that judged their income insufficient to grow more children (10.29% versus 2.3%) and those that did not have a support network to raise children (11.43 versus 1.72%).

Importantly, the younger generation is more pessimistic about the future of Pediatric Surgery in Brazil (32.57% predict a favorable future to the development of the specialty in the country, versus 47.13% of the older BPS, $p=0.0002$). Also, less < 51 years-old BPS are satisfied with their professional choices (60.57% versus 85.63%, $p=0.008$).

DISCUSSION

Research about the professional realities and perspectives is scarce, however important to plan the future of the specialty, with obvious implications to health managing, training and labor force offer. Professional expectations and real-life problems cannot be directly

transferred between different economic and social environments. Circumstances of each country and regional realities may be unique. Attrition and withdrawal from the specialty represents a serious problem if the professional environment is adverse and/or earnings are unsatisfactory, especially when considering experts in Pediatric Surgery, that require an extremely long and sophisticated training and continuous education, besides needing to work in well-equipped hospitals. Also, the “brain drain” problem, normally referring to the abandonment of LMIC for high income countries by highly trained professionals, may be re-signified to refer to the preferential distribution of professionals to the richer regions offering better salaries and life conditions in big countries such as Brazil.

Our data suggest that females will largely predominate among pediatric surgeons in Brazil in the near future. At the moment (2023), 79.55% of pediatric surgery fellows in Brazil are females (non-published research data). This means that the needs of this specific population, such as maternity leave and day care availability have to be included in managing and health planning considerations.

We proved that being a female BPS has specific concerns and consequences. The proportion of single female BPS is much higher than males, independent of age. Female BPS openly declared that the profession deeply influences family planning. Our data prove that being childless or having an only child is directly related to gender among BPS. The age of the first child was higher for females, with possible implications in the number of children, obstetric complications and the need for fertility treatments¹¹. In this cohort 17.6% of the females declared having used ovulation inductors or in vitro fertilization. Similar data were obtained from female surgeons’ cohorts from other countries¹²⁻¹⁴. Those data are similar to recent research figures in Brazil, reporting 12.73% miscarriages, 6.9% childless female pediatric surgeons, 16.67% female pediatric surgeons reporting fewer children than desired and 10.92% needing infertility treatment. Moreover, almost 10% admitted marital conflict involving future pregnancies, and 2/3 reported professional problems related to pregnancy and motherhood⁸. This is easy to understand, as most BPS end their training after 30 years of age and plan to have children either after fellowship or after satisfactory insertion in the job market. BPS have less children (1.38/woman) than women in Brazilian population (1.77/woman)^{2,8}. This is not related to originating from a higher social class or opting for a university degree: research comparing law and medical undergraduates in Brazil proved that medical students are older in their graduation, admit a profound influence of the profession on their family planning and need to wait longer for insertion in the job market, while both cohorts plan their first pregnancy after full professional training. This is more evident for those that plan a career in surgery¹⁵. These problems seem to be worse for the younger generation of female BPS. Women also tend to dedicate themselves proportionally more to SUS and depend more on SUS wages. This may relate to the higher competitiveness of the private market and to the need of predictable working scales for women who are mothers. They also tend to hold more jobs than male surgeons, a paradox potentially related to the quality of employment, including salaries offered.

We have demonstrated that older BPS (>70 years of age) still work, including operating-room activity. A feature of the country professional market for physicians is the multiplicity of jobs/professional commitments, and it is clear from our data that BPS tend (or need...) to “semi-retire”. This is facilitated by the absence of laws legislating about a mandatory age for retirement for physicians. We have no data to prove the reason why those physicians persist working. It is possible to speculate that this may occur because of financial needs (either the

desire to maintain a high standard of living or the need to maintain their standard of living), passion for the specialty, absence of other personal interests and/or psychological need to stay working.

The recent modifications in the job market, salaries, contracting models and retirement age for physicians in Brazil are reflected in our data. Most BPS retain multiple jobs and work enormous workloads. This is an obvious reason for attrition, burn out and disillusionment, and may be related, paradoxically, to lower productivity. It is, indeed, common for professionals to work mostly as on-call personnel, either on-site or at-distance, to the detriment of jobs that require daily attendance to the departments and routine patient care, which are proportionally worse-paid, implying losing quality of follow-ups and doctor-patient relationships. The present contracting models, based in fees-for-service and offering few or no personal guarantees are very stressful and especially adverse for young females needing maternity leave.

The unequal distribution of BPS in Brazil has been previously demonstrated⁵⁻⁶, and confirmed by our data and other recent Brazilian research^{7,9}. Jesus et al and Aguiar et al papers⁵⁻⁶ date from 2009: no significant improvements were verified in the last two decades. Pediatric surgeons are rare in the mc and no regions, except for Brasília (the country's capital, located in the mc region, which holds the highest per capita GDP in the country). These two regions represent together 5,482,000 km², and circa 6,000,000 < 14 years-old (circa 20% of the Brazilian population is aged 0-13 years-old)¹⁶.

Most BPS work in general hospitals with pediatric surgery departments. Specialized Pediatric hospitals are minority in Brazil, especially among private institutions, that consider profits from pediatric treatments to be lower than those corresponding to adult treatments. This may be a disadvantage, as most agree that centralization of care and specialization of personnel and equipment is related to efficiency and better results. Even in general hospitals many pediatric beds have been inactivated recently, both private and public, especially in ne and se regions¹⁷⁻¹⁸, directly affecting the job market for BPS.

This research demonstrated that almost a third of Pediatric Surgery departments in Brazil are not directly linked to a maternity unit. Possibly related to this, the participation of BPS in fetal counselling is very limited (19.43%), and has a lot of room to grow.

Technological means are unequally distributed (Figure 3). Some consequences are obvious: only 59.43% of BPS have access to frozen specimens exams, limiting, for example, the surgical treatment of Hirschsprung's disease or partial orchiectomies for pediatric testicular tumors.

Most BPS are directly connected to medical education, not limited to the training of pediatric surgery fellows. Many are Pediatric Surgery Professors or teach related disciplines, but, despite prestige, salaries are highly unsatisfactory for medicine professors and contribute to a low proportion of the professionals earning. Medical students, general surgery residents and Pediatrics residents attend most pediatric surgery departments, which may contribute to disseminate information about the specialty, to attract talents to the field and to educate other physicians about Pediatric surgical diseases. The frequency of general urologist fellows is lower, with consequences to their education about congenital urological diseases (in Brazil

urologic diseases in children are treated by Pediatric Surgeons and Urologists, in similar proportions).

BPS frequently complain about the efficacy of CIPE's actions to protect and to qualify Brazilian Pediatric Surgery. Regulations of medical activities in Brazil, are, however, complicated, as health management, including residency/fellowship regulations, comes from the government, regulation of physicians activities come from the Federal Council for Medicine, and regulation and distribution of specialty expertise titles comes from Brazilian Medical Association (according to the results of TE examinations). Specialty Societies (as CIPE) do not have the authority to interfere in many important problems, and are limited to act only as representative lobbies in many situations. Many BPS are not interested or give a low priority to the TE examination, especially surgeons from no-ne-mc regions, females and younger BPS. This is mainly related to the test not being mandatory, to personal biases towards the test, and to the high workload of most surgeons, but TE test may be important to standardize minimal technical parameters for pediatric surgery in Brazil and to reinforce CIPE as representative of BPS.

The relative low number of BPS that are satisfied with their professional choices, and, especially, the high proportion of BPS that predict an unfavorable future for Pediatric Surgery in Brazil are deeply worrying, especially as we observe that disillusionment predominates among the younger BPS. Pediatric Surgeons working part-time as physicians in other specialties or management activities and a small but non-negligible minority considering migrating to other specialties or even out of medicine agrees to that reality. The main complaints registered in this research in free comments were related to low wages, low prestige of the specialty, and unrestrained competition among colleagues, that may be obviously related. Will we be able to attract "the best and the brightest" in the future?

Limitations

Our questionnaire was answered by a third of our target population. This proportion, however, is typical of this kind of research. Our research population is well balanced in what concerns age ranges and gender of the professionals.

Conclusions

Research about reality and perspectives of BPS is deeply needed in order to offer adequate management and planning. The distribution of BPS is unequal, and a specific form of "brain drain" occurs: experts tend to abandon the poorest and peripheral provinces to work in the richer southern and south-western provinces, looking for better earnings and professional opportunities. Females predominate among BPS, and this tendency is in progress. Most BPS work in general hospitals, and only a minority relates directly to maternity units, affecting participation in fetal counselling. Female BPS suffer with limitations in what concerns family planning, with a higher proportion of late pregnancies, single, childless or with an only child professionals, as compared to males. Female BPS need infertility treatment more frequently than women in the general population. Brazilian BPS are mainly salaried and employed by SUS, but most have multiple jobs and heavy workloads. BPS tend to late retirement (> 70 years-old). Most BPS participate in medical education, and are interested in post-graduation and sub-

specialization courses. The relationship between medical societies, including CIPE, and BPS is frequently confrontational, due to dissatisfaction with multiple aspects of the professional activities, and fractioning of medical regulation in the country. Disillusionment with their professional choices is common among BPS, especially younger BPS, mainly related to wages below expectation, competition among colleagues, and low prestige.

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Table 1: Main professional income versus activity

Income source	General data n (%)	Male n (%)	Female (n, %)	So-su (n, %)	No-nemc (n, %)	≤50 (n, %)	>50 (n, %)
SUS	186 (53.14)	80 (46.51)	106 (59.55)	132 (50)	54 (62.79)	115 (65.71)	71 (40.8)
APS	109 (31.14)	63 (36.63)	46 (25.84)	89 (33.71)	20 (23.26)	34 (19.43)	74 (42.53)
Salary *	18 (5.14)	12 (6.98)	6 (3.37)	13 (4.92)	5 (5.81)	9 (5.14)	9 (5.17)
Professor	10 (2.86)	8 (4.65)	2 (1.12)	10 (3.79)	0	2 (1.14)	8 (4.6)
Other specialty	22 (6.29)	9 (5.23)	13 (7.3)	17 (6.44)	5 (5.81)	11 (6.29)	11 (6.32)
Non-medical job	4 (1.14)	4 (2.33)	0	3 (1.14)	1 (1.16)	1 (0.57)	3 (1.72)
Financial market rent	3 (0.86)	2 (1.16)	1 (0.56)	1 (0.38)	2 (2.32)	0	3 (1.72)

*contract with private institutions

Table 2: Family issues and number of children versus groups

Data	General data n (%)	Male n (%)	Female (n, %)	So-su (n, %)	No-nemc (n, %)	≤50 (n, %)	>50 (n, %)
Single	38 (10.86%)	1 (0.58%)	37 (20.79%)	25 (9.47%)	13 (15.42%)	30 (17.14%)	8 (4.6%)
Married/cohabiting	281 (80%)	152 (88.37%)	129 (72.47%)	214 (81.06%)	67 (77.91%)	140 (80%)	140 (46.55%)
Divorced	31 (8.86%)	18 (10.47%)	13 (7.3%)	25 (9.47%)	6 (6.98%)	6 (3.43%)	25 (14.37%)
Childless	64 (18.29%)	11 (6.4%)	53 (29.78%)	47 (17.8%)	17 (19.77%)	48 (27.43%)	16 (9.2%)
1	89 (25.43%)	33 (18.19%)	56 (31.46%)	73 (27.65%)	16 (18.6%)	54 (30.86%)	35 (20.11%)

2	116 (33.14%)	67 (38.95%)	49 (27.53%)	87 (32.95%)	29 (33.72%)	50 (28.57%)	65 (37.36%)
3	69 (19.41%)	51 (29.65%)	18 (10.11%)	47 (17.8%)	22 (25.58%)	20 (11.43%)	49 (28.16%)
4	11 (3.14%)	9 (5.23%)	2 (1.12%)	9 (3.41%)	2 (2.33%)	3 (1.17%)	8 (4.6%)
>4	1 (0.29%)	1 (0.58%)	0	0	1 (1.16%)	1 (0.57%)	0
Minimum age first child	19	21	19	20	19	21	19
Maximal age 1 st child	51	51	46	51	44	46	51
Age first child mean (SD)	32.30 (4.94)	31.25 (5.03)	33.66 (4.47)	32.54 (5)	31.54 (4.67)	33.66 (4.42)	31.18 (5.06)
Age first child (median)	32	31	33.5	32	32	34	31

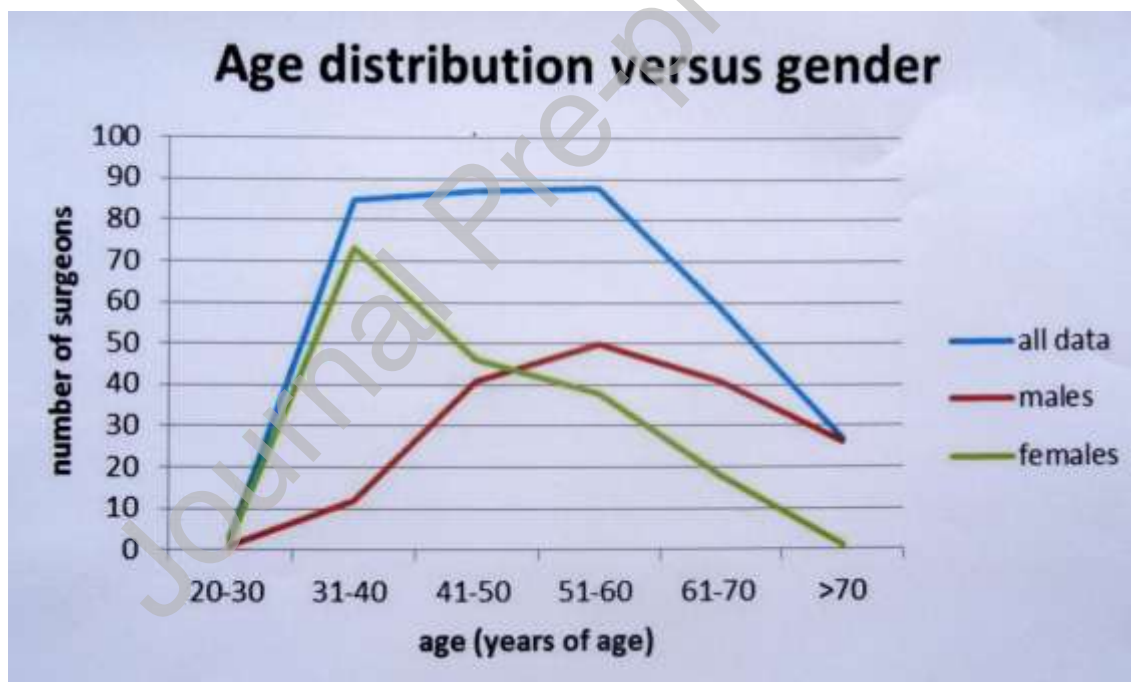


Fig 1.

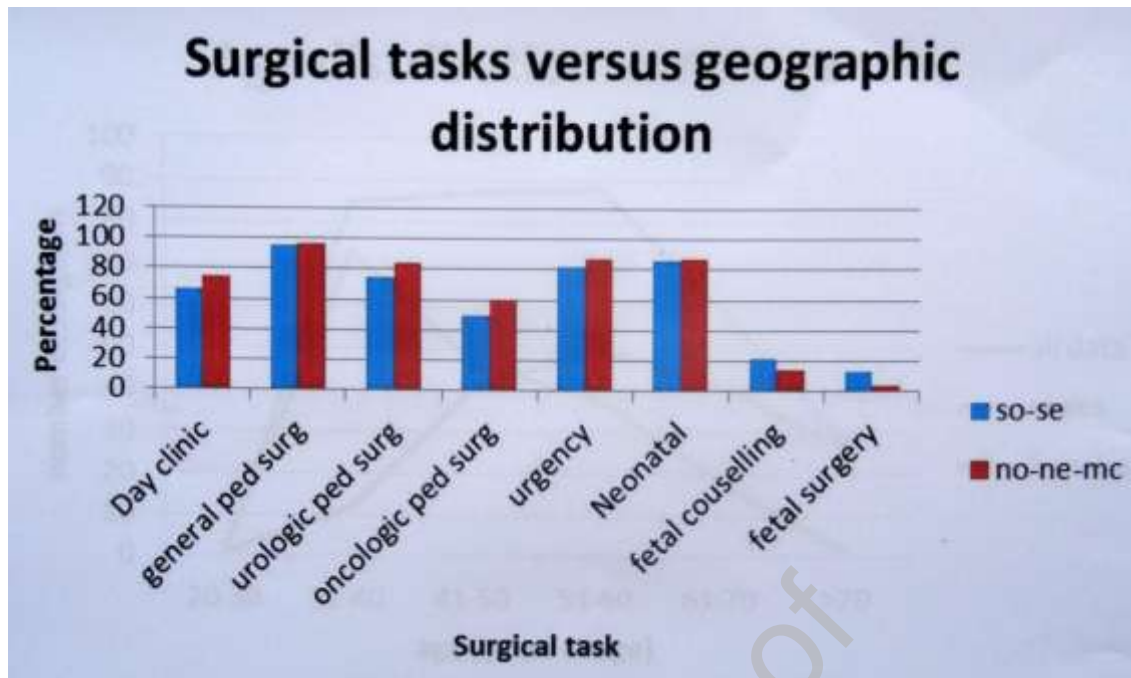


Fig. 2.

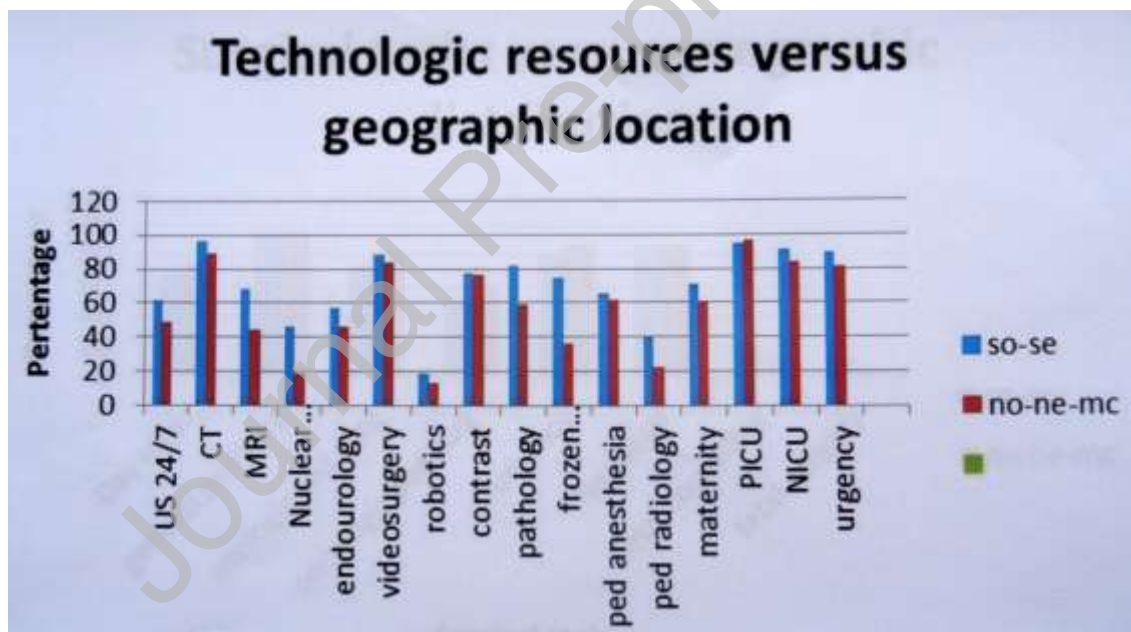


Fig 3.

Declaration of Competing Interest

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