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Factors influencing the improvement of neuraxial labor analgesia in China: a questionnaire survey

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During labor, most women suffer exceptionable pain, especially after the first stage of labor. Numerous studies and research contributions have confirmed that neuraxial labor analgesia (NLA) is an effective, safe, and cost-effective method to relieve pain during labor.[1] More than a decade ago, a British survey on epidural analgesia reported that 90% of centers offered 24 h epidural analgesia.[2] In comparison, according to surveys conducted in 2006 by the First Hospital of Peking University of China, among the 76 hospitals in China that performed NLA, only ten hospitals (13.1%) offered 24 h service.[3] Although some improvements have been made in recent years, the overall rate of analgesia use during labor in China is still low compared to western counterparts.

Currently, there are few large-scale surveys that study the current application of NLA in China. Therefore, we designed a questionnaire to focus specifically on the practice of NLA, along with any associated obstacles.

This survey was approved by the Obstetrics Group of the Anesthesiology Branch of the Chinese Medical Association. The electronic version of the questionnaires was built on an online survey platform-Wenjuan (https://www.wenjuan.com). A quick response code link for the questionnaire was generated and sent to chat groups associated with the China National Center of Anesthesia Quality Assurance (http://www.ncis.cn/) in Wechat (Tencent Inc, Shenzhen, China). These groups included 2521 anesthesia department directors and vice-directors of model public hospitals in China. We stipulated that the department director or vice-director at each hospital needed to be responsible for answers to the questionnaire. The survey was conducted between February 21, 2018, and March 15, 2018. The question formats were multiple-choice questions. The questionnaire was designed to gather information related to the following topics:

1. General information concerning the hospital: hospital name, location, grade, and specialty categories, and whether or not the hospital had an obstetrics department. (If the answer was "no," then the remaining questions were skipped.)
2. Availability of NLA. (If the answer was "no," then questions 3–5 were skipped.)
3. Characteristics of NLA: was it available for 24 h service; source of the recommendation or request for NLA.
4. Type of NLA and other analgesic methods available.
5. Causes of any suspension of NLA service.
6. Causes of the absence of NLA service.

(Questions 1–4 were single select, questions 5–6 were multi-select.)

If the completed questionnaires received from both the director and the vice director of the same hospital were different with respect to the information provided, a follow-up telephone survey was conducted to identify which questionnaire was correct. After the data were collected, basic descriptive statistics for all variables were applied, including numbers, percentages, and 95% confidence intervals. SPSS version 19.0 software package (SPSS Inc, Chicago, IL, USA) was used to perform the statistical analyses.

Of the 2521 questionnaires that were sent out, 2344 were retrieved, and 241 were excluded due to duplicate data, representing a reply rate of 83.42%. Forty-two replies were from units that no longer had an obstetrics department and were excluded from further analysis; one reply was excluded because the hospital name was missing.

The NLA service was provided by 1382 hospitals (67.09%) [Table 1]. Characteristics of NLA included the

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Table 1: Descriptive statistics of availability of neuraxial labor analgesia for China in 2017.

Items	Yes, *n* (%)	Yes (%), 95% CI	Total (*n*)
Hospitals surveyed	1382 (67.09)	65.06–69.12	2060
General hospital	1021 (63.06)	60.71–65.42	1619
Maternal and child hospital	329 (89.89)	86.79–92.99	366
Hospital of other specialties	32 (42.67)	31.21–54.12	75
According to grade*			
Tertiary	646 (74.94)	72.04–77.84	862
Secondary	736 (61.44)	58.68–64.20	1198
According to the geographic region of China			
Northeast	79 (74.53)	66.10–82.96	106
North	138 (66.03)	59.55–72.50	209
East	555 (67.68)	64.48–70.89	820
South	151 (67.41)	61.23–75.60	224
Central	228 (71.47)	66.49–76.46	319
Northwest	76 (53.90)	45.57–62.23	141
Southwest	155 (64.32)	58.22–70.41	241

* Detailed rules of the regulations on the administration of medical institutions. (http://www.nhc.gov.cn/fzs/s3576/201808/7a922e4803fa452f99d43a25ec0a3d77.shtml). CI: Confidence interval.

following details. 201 (14.54%) of the 1382 available hospitals responded that anesthesiologists were on duty 24-h in the obstetrics department. Over half of the NLA cases were requested by women in labor in 871 (63.02%) hospitals, and 511 (36.98%) cases of NLA were recommended proactively by an obstetrician or anesthesiologist. According to the number of NLA cases performed in 2017, we divided the hospitals included in the survey into seven groups. Among them, 734 (53.11%) hospitals had fewer than 100 cases of NLA performed in that year.

We analyzed the type of NLA and other analgesic methods that were used. Epidural analgesia was performed as the main analgesic procedure in 1095 (79.23%) hospitals, and 1232 (89.15%) hospitals used opioids as an adjunct to local anesthetics for neuraxial analgesia. Of the 1609 hospitals that had been suspended or never had the NLA service, 1105 hospitals (68.68%) considered that the shortage of anesthesiologists was the major obstacle of developing NLA service.

Compared to the year 2005, when only 16.1% of average Chinese people had even heard of NLA,[4] currently, more women in labor are actively requesting the NLA service, due to the high effectiveness and high degree of maternal satisfaction. However, the availability of NLA service is far from sufficient for a country that currently has 18 million pregnant women per year, and especially after the establishment of the universal two-child policy in 2016. In recent years the not-for-profit No Pain Labor & Delivery-Global Health Initiative (NPLD-GHI) that was founded at the Northwestern University Feinberg School of Medicine in the US in 2006 has increased the rate of epidural analgesia use in China. The NPLD-GHI initiative and other public welfare projects that have been organized by the National Health and Family Planning Commission have contributed to increased administration of NLA in China.[5]

In summary, the NLA service has improved recently due to popularization and promotion through public service projects in China, but the current situation is far from optimal. The primary obstacle to further development of the NLA service consists of two aspects: first is the overall shortage of anesthesiologists; second is the incongruity between risk, remuneration, and long work shifts for anesthesiologists in obstetrics. Fortunately, China is now adjusting the medical system to solve these problems and is in the process of incorporating the NLA service into the National Medical Insurance to benefit more pregnant women.

There are several advantages and limitations associated with the present study. The survey was distributed to a quarter of all the secondary and tertiary public hospitals in China, which allowed for a large sample size, and we observed minimal deviations in the statistical results. One limitation of this study is that we did not have the exact epidural rate, just what was estimated by ranges of the cases that were included. A new survey would benefit from coordination with the National Health Commission to request more information and to assess the process and outcomes from the patient's perspective using a database that included real-time evaluations.

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Conflicts of interest

None.

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