

# Frequency of Contributing Factors behind Parental Refusal for Lumbar Puncture in Children in a Tertiary Care Hospital

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## ABSTRACT

**Aim:** To determine the frequency of contributing factors behind parental refusal for lumbar puncture in children.

**Study design:** Descriptive cross-sectional study.

**Place and duration of study:** Department of Paediatrics, Jinnah Hospital Lahore and Shaikh Zayed Hospital, Lahore from 1<sup>st</sup> January 2021 to 30<sup>th</sup> June 2021.

**Methodology:** One hundred and thirty nine parents whose children met the screening requirement were enrolled. Children's age, sex, parent's educational status and socio-economic position, were recorded. Parents' reasons for refusing lumbar puncture (as defined by operational standards) were recorded.

**Results:** There were 63.3% males and 36.7% females with mean age 4.9±3.02 years. According to contributing factors, 70% of parents thought it is risky while 12% were afraid of the needle, 34% had a terrible experience and 23% didn't want an intrusive technique.

**Conclusion:** The chief factor for parents' discontent with lumbar puncture in their kids was that it's a hazardous treatment. Most parents are uninformed of the value of lumbar puncture in assessing and treating children, it appears that the higher the parent's awareness leads to more positivity they have in this respect.

**Keywords:** Cerebrospinal fluid, Lumbar puncture, Factors

## INTRODUCTION

Lumbar puncture is a technique in which a needle is introduced into the spinal canal to collect and study the cerebrospinal fluid. The needle pierces the tissues of lumbar region to reach the spinal canal, giving it the name "lumbar puncture." In pediatric emergency, lumbar puncture is commonly used to collect data more about cerebrospinal fluid (CSF)<sup>1-4</sup>.

It rules out potentially life-threatening illnesses (such as bacterial meningitis or subarachnoid hemorrhage), and treats them (e.g., treatment of pseudotumor cerebri). Cerebrospinal fluid analysis can also help diagnose other illnesses (such as demyelinating diseases, central nervous system (CNS) diseases including Guillain-Barré syndrome, and carcinomatous meningitis)<sup>5</sup>

Lumbar puncture is contraindicated in patients with infected skin above the needle entry site, increased intracranial pressure (ICP), blood coagulation disorder, and brain abscess. A correctly conducted lumbar puncture has a very low risk of serious consequences. Most common side effect is post lumbar puncture spinal headache.

Even though diagnostic lumbar puncture is a regular treatment, some parents are afraid of having it done on their kid and refuse to consent. This might lengthen the hospital stay for empirical IV wide spectrum antibiotic therapy, increase the expense of hospitalization, and raise the risk of antibiotic resistance. According to research by Narchi et al<sup>6</sup>, 44% of 55 families denied consent, with 75% citing fear of complications and 21% believing that lumbar puncture was unnecessary. Another research in Iran by Khakshour et al<sup>7</sup> found that 67% of people declined lumbar puncture because they were afraid of –ve effects.

The rationale for this study is that there is no data available at the local level, so it will provide information about parents' attitudes toward lumbar puncture and will aid in the improvement of parents' knowledge of the lumbar puncture process, which influences their belief and cooperation during tests for early detection of disease and specific therapy to prevent drug resistance.

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## MATERIALS AND METHODS

This cross-sectional study was carried out in the Department of Paediatrics, Jinnah Hospital Lahore and Shaikh Zayed Hospital, Lahore from 1<sup>st</sup> January to 30<sup>th</sup> June 2021 after IRB permission. The sample size of 139 was calculated using a 95% confidence level and a 0.10 margin of error, as well as the predicted proportion of lumbar puncture not required was 21%. Patients of both genders, aged 6 months to 10 years, who required diagnostic lumbar puncture during their hospital stay and whose parents refused were included. Patients who were ineligible for lumbar puncture were excluded from the trial. After informed consent of child's parents and approval by Ethical Committee, all children who met the inclusion criteria were enrolled in the study. Their demographic data, such as age, sex, parent's educational status, and socio-economic position, were recorded. Parents' reasons for refusing lumbar puncture were recorded. The data was entered and analyzed through SPSS.26.

## RESULTS

There were 88(63.3%) males and 51 (36.7%) females. Eighty four (60.4%) of the patients were between 6 months to 5 years while 55 (39.6%) were between 6 to 10 years of age. According to father's qualification, 34(24.5%) illiterate, 41(29.5%) up to middle school, 48 (34.5%) matriculation and 16(11.5%) were graduates, mother's qualification, 39(28.1%) were illiterate, 66(47.5%) had up to middle school, 27(19.4%) matriculation and 7(5%) were graduates, breakdown of residence status, 93(66.9%) came from rural regions and 46(33.1%) from urban areas and contributory factors, 70% of parents thought lumbar puncture was a risky technique, while 12% were afraid of the needle, 34% had a past poor experience and 23% did not want an intrusive technique (Table 1).

## DISCUSSION

The term 'informed consent' basically gives better knowledge to people and provides them their due right to approve or reject an intervention.<sup>7</sup> Unluckily, there are many obscurities attached to the process. Every parent though wants their child in best of its health but what management they opt for their child majorly relies on their

personal beliefs and opinions. All of this is majorly governed by cultural, social and regional beliefs, and especially destitution and poor literacy rate in Pakistan<sup>8</sup>. Lumbar puncture helps in diagnosis of any CNS infection by examining the cerebrospinal fluid (CSF). Although this procedure is highly effective yet parental refusal for its consent is matter of continuous concern worldwide, that reflects this problem is universal<sup>9-11</sup>.

Table 1: Demographic information of the patients (n=139)

Characteristics	No.	%
<b>Gender</b>		
Male	88	63.3
Female	51	36.7
<b>Age</b>		
6 months – 5 years	84	60.4
6 – 10 years	55	39.6
<b>Father's qualification</b>		
Illiterate	34	24.5
Middle	41	29.5
Matric	48	34.5
Graduate	16	11.5
<b>Mother's qualification</b>		
Illiterate	39	28.1
Middle	66	47.5
Matric	27	19.4
Graduate	7	5.0
<b>Residential status</b>		
Rural	93	66.9
Urban	46	33.1
<b>Perception about LP as dangerous procedure</b>		
Yes	70	50.4
No	69	49.6
<b>Fear regarding needle pin</b>		
Yes	12	8.6
No	127	91.4
<b>Previous bad experience</b>		
Yes	34	24.5
No	105	75.5
<b>Don't want an invasive procedure</b>		
Yes	23	16.5
No	116	83.5

One of the present study's goals was to see if there was a link between schooling and the likelihood of lumbar puncture permission. Parents with no formal training agreed more readily than someone with considerable (primary and secondary) formal education, according to this study, despite the fact that more than 50 % of participants were illiterate. The authors speculate that this is due to the widespread belief in this society that doctors are messengers of God (Maseeha) who aim to improve the lives of their patients, as well as a concern of not receiving appropriate treatment if lumbar puncture is rejected. There was no notable change in the patient's age or gender between families who granted consent and those who did not in this research. The result is in line with previous researches<sup>9-11</sup>.

The most prevalent reason for refusing to grant agreement for lumbar puncture was found to be a risky technique, which was cited in 70 cases (50.4%), while 34 households (24.5%) cited a past poor experience as their reason for rejecting. A small number of families 23(16.5%) did not want an intrusive operation, whereas 12 families (8.6%) were concerned about the lumbar puncture needle.

These findings matched those published in the literature, which showed that a similar proportion of people denied lumbar puncture because they thought it was unnecessary (21%), and that 75% of families declined permission because they were afraid of a harmful treatment<sup>9</sup>. Similarly, research in Kuwait found that parents who thought lumbar puncture was dangerous were most concerned about paralysis (49.2%) and discomfort (16.6%) after the surgery<sup>12</sup>.

According to research comparing the understanding of all parents who were requested for lumbar puncture permission, the majority and a similar percentage (57.1%) perceive diagnosis to be the primary purpose for the treatment<sup>12</sup>. Another research performed in the UAE found an interesting fact that differed from our findings: a major deciding factor in those who consented to lumbar puncture was growing attention of the risk for complications after bacterial meningitis, which helped for family members to enable LP and avoid these problems<sup>13</sup>.

As cultures from lumbar puncture are considered 'GOLD' standard and rest of the newer molecular methods considered as

'PLATINUM' standard<sup>14</sup>. Nothing could give us the replacement of lumbar puncture in diagnosing CNS infection. Hence parental refusal for lumbar puncture not only harms the patient but doctor as well. In contrary, blood cultures often hold significant value if lumbar puncture is negative or is unavailable, yet they give us negative results in 15-38% of pediatric patients with confirmed meningitis<sup>15-18</sup>.

According to a survey, among all the samples just 62% of cultures came out to be positive in neonatal meningitis<sup>13</sup>, this reduces the yield by 20%<sup>19-20</sup>. In such cases, the only alternative treatment is empirical treatment of doubtful infection. In cases like these, the pros and cons of an untreated CNS infection and the risk of giving intravenous antibiotics and posing burden to healthcare system must be compared<sup>21-23</sup>.

**CONCLUSION**

Most of the parents were oblivious of the benefits of lumbar puncture in diagnosing and treating the disease. So, a better knowledge of the procedure amongst the parents might bring forth their better behavior. An informed consent of parents of such pediatric patients holds significant importance in performing such procedures.

**Conflict of interest:** Nil

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