Original Article :

Knowledge and concerns of lumbar puncture procedure among the general population in Makkah, Saudi Arabia: A cross-sectional study

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Abstract

Background and Aims:
Lumbar puncture (LP), or spinal tap, is an essential invasive procedure for diagnostic and therapeutic purposes. Despite its significance, fear, uncertainty, and lack of awareness often lead to refusal. Studies suggest increasing knowledge improves attitudes toward LP. However, limited research has examined public awareness in Saudi Arabia. This study evaluates knowledge and attitudes toward LP among Makkah's population to guide education, reduce anxiety, and enhance acceptance of this vital procedure. This study evaluated the general public's knowledge and attitudes toward LP procedures in Makkah, Saudi Arabia, to identify gaps and inform educational interventions.

Methods:
A cross-sectional study was conducted with 385 participants from various demographics. Data were collected using a structured questionnaire assessing familiarity, knowledge, and attitudes towards LP. Knowledge levels were categorized as poor, good, or excellent based on percentage scores. Statistical analysis was conducted using SPSS version 25. Descriptive statistics and median/range were used for data, while Pearson's Chi-squared or Fisher's exact test assessed associations. A p-value <0.05 was considered statistically significant.

Result:
The study found that 65.1% (n=250) of participants had heard of LP, but only 9.1% (n=35) had personal experience with the procedure. Knowledge levels were predominantly poor (52.1%), with only 5.5% achieving excellent knowledge. Attitudes were generally positive; 74.7% had a good attitude towards LP. Notably, 56.5% (n=217) preferred receiving a detailed explanation if LP was recommended, and 67.7% (n=260) were willing to sign a consent letter; however, 36.8% (n=141) preferred alternative treatments over LP. The study also highlighted significant fear of needles, particularly in the vertebral column (77.3%, n=297). Gender did not significantly affect knowledge levels (p=0.37). Age had a significant impact, with younger participants (18–25 years) having higher knowledge (p<0.001). Marital status and occupation also affected knowledge, with singles and students showing higher levels (p=0.002 and p<0.001). Health insurance status was significant (p=0.004). Nationality, residence, and income showed no significant differences (p=0.65, 0.79, 0.51).

Conclusion:
Despite generally upbeat attitudes, the findings indicate a significant gap in public knowledge about lumbar puncture. The study underscores the need for targeted educational interventions to improve understanding and address fears associated with LP.

Keywords:
Lumbar puncture, Knowledge, Concerns, General population, Saudi Arabia

Introduction:

Lumbar puncture (LP), also known as a spinal tap, is an essential invasive procedure that involves the withdrawal of cerebrospinal fluid (CSF) to aid in the diagnosis and management of various neurological conditions[1]. Its diagnostic utility is broad, enabling clinicians to detect central nervous system (CNS) infections, malignancies, intracranial hemorrhage, multiple sclerosis, and sarcoidosis[1-3]. Beyond its diagnostic role, LP serves important therapeutic purposes, including administering anesthesia or analgesia, delivering antimicrobial therapy, and managing conditions such as idiopathic intracranial hypertension[3].

Despite its clinical importance, LP cannot be performed in all cases. Specific contraindications must be carefully evaluated before proceeding. Patients with intracranial space-occupying lesions or posterior fossa masses are at risk of cerebellar tonsil herniation, regardless of the volume of CSF removed. Similarly, abnormal intracranial pressure with a risk of herniation, anticoagulant use, uncorrected bleeding disorders, congenital spinal anomalies, and localized skin infections at the puncture site are significant contraindications[1].

Global acceptance of LP varies widely and is strongly influenced by cultural beliefs, healthcare practices, and patient awareness[4-7]. For example, in East Asia, refusal rates among parents of children with febrile seizures range from 25% to 28%, while in the United Arab Emirates, refusal has been reported as high as 44% (4-5). In contrast, studies in Western countries demonstrate lower refusal rates, approximately 5% among U.S. patients with Lyme disease and 7% in Denmark among individuals with isolated optic neuritis (6-7). These variations highlight the critical role of public perception and education in shaping attitudes toward LP[4,7].

Although LP is generally considered safe, it is not entirely without risks. Minor complications such as post-procedural headaches occur in about 17% of patients, and transient back pain is reported in 19%[1]. Severe complications, though rare, can be life-threatening and include infection transmission, spinal or subdural hematoma, nerve root injury, and brain herniation[1,8]. Nonetheless, the diagnostic value of LP remains unparalleled, with CSF analysis showing a diagnostic accuracy of 97.5%, a negative predictive value of 96%, and a sensitivity of 90%. This makes LP indispensable for confirming or excluding conditions like meningitis, subarachnoid hemorrhage, and other neuro-inflammatory diseases[8,9].

Despite its proven safety and efficacy, LP is often associated with misconceptions

and anxiety. In many regions, patients and their families fear the procedure, believing it may cause paralysis or even death. For instance, a study in Zambia revealed that such misconceptions were a major barrier to acceptance, leading to significant resistance to LP[2]. Importantly, these fears are not limited to low-resource settings; similar concerns may also influence patient decisions in more advanced healthcare systems.

In Saudi Arabia, several studies have explored public knowledge and attitudes toward LP, revealing substantial gaps. In Riyadh, 80.8% of participants had poor knowledge of LP, while 79.2% demonstrated only a moderate attitude toward the procedure[10]. A similar pattern was observed in Madina, where 65.6% of participants lacked adequate knowledge, despite 69.7% expressing a generally positive attitude. Notably, individuals with a medical background consistently scored higher in knowledge compared to non-medical participants[11].

However, no comprehensive research has yet been conducted in Makkah, a city with a uniquely diverse population due to the influx of millions of pilgrims each year. Understanding public awareness and attitudes toward LP in this context is critical for improving patient education, reducing procedure-related anxiety, and enhancing compliance with medical recommendations.

To address this gap, the present study aims to assess the knowledge and attitudes of the general population in Makkah, Saudi Arabia, regarding LP. By identifying misconceptions and evaluating awareness levels, this study seeks to inform targeted educational initiatives and ultimately improve healthcare delivery and patient outcomes in the region.

Methods:

Study design and population:

This research employed a web-based descriptive cross-sectional study design utilizing a snowball sampling technique. Data were gathered through an online questionnaire targeting the adult general population in Makkah, Saudi Arabia. The web-based approach facilitated broad reach and accessibility, ensuring that participants could easily engage with the study from their locations. The study focused on the adult general population of Makkah. The target demographic included individuals aged 18 and above, representing a broad cross-section of the community.

Inclusion and exclusion criteria:

Participants were eligible if they were 18 years or older, able to read and understand Arabic, and willing to provide informed consent. These criteria ensured respondents could comprehend the questionnaire and voluntarily participate in the study. No

specific exclusions were applied in this study, allowing for the inclusion of a wide range of participants from the target population.

Data collection and management:

Data was collected through an online Google Form, distributed electronically in Arabic to the target population. The questionnaire that we used was a completely validated questionnaire that was previously used in a published study[10]. The questionnaire comprised several sections: a consent form, sociodemographic data, an assessment of knowledge regarding lumbar puncture procedures, attitudes towards lumbar puncture, and specific questions about lumbar puncture procedures. A combined system of codes, numbers, and pseudonyms was implemented to maintain confidentiality. Access to the data was restricted to the researchers only, ensuring that participants' information remained secure and private.

Ethical considerations:

The study protocol was submitted to the Umm Al-Qura University Institutional Research Board (IRB) for approval. No study activities commenced until IRB approval was obtained. Survey responses were collected anonymously, with no identifying or private information gathered from participants, maintaining strict confidentiality throughout the study.

Statistical analysis and scoring system:

Statistical analysis was performed using SPSS Software version 25. Descriptive statistics, including frequencies and percentages, were used for categorical data, while the median and range were employed for continuous data of knowledge scores due to their skewed distribution. Associations between participants' knowledge of lumbar puncture and their sociodemographic characteristics were assessed using Pearson's Chi-squared test or Fisher's exact test, as appropriate. A 95% Confidence Interval (CI) was used, with a p-value of <0.05 indicating statistical significance.

For the knowledge and attitude assessments, the study employed a scoring strategy similar to a previous study[10]. Knowledge scores were assigned one point for each correct answer, with a maximum score of 18. Participants scoring above 75% were rated as "excellent," those between 50% and 75% as "good," and those below 50% as "poor." Attitude responses were valued on a scale from strongly agree (4) to disagree (0) strongly. With 10 questions, the maximum attitude score was 40. Scores above 75% were deemed "excellent," between 50% and 75% "good," and below 50% "poor."

Results:

Demographic Characteristics of the Participants:

Table 1 presents the demographic data of the included participants. A total of 384

participants were included in the current study. The sample consisted of 48.7% males (n=187) and 51.3% females (n=197). Age distribution showed that 47.7% (n=183) were between 18 and 25 years, 16.9% (n=65) were 26 to 35 years old, 16.1% (n=62) were 36 to 45 years old, and 19.3% (n=74) were over 45 years. Regarding nationality, 93.2% (n=358) were Saudi, while 6.8% (n=26) were non-Saudi. In terms of marital status, 52.6% (n=202) were single, 42.4% (n=163) were married, 4.4% (n=17) were divorced, and 0.5% (n=2) were widowed. Occupationally, 6.2% (n=24) were unemployed, 43.8% (n=168) were students, 25.8% (n=99) were governmental employees, 11.7% (n=45) were private employees, 2.1% (n=8) were businesspersons, 5.2% (n=20) were looking for a job, and 5.2% (n=20) were retired. Health insurance coverage was reported as 28.6% (n=110). Most participants resided in the city (88.0%, n=338) compared to rural areas (12.0%, n=46). Income levels were reported as 10.7% (n=41) low, 79.7% (n=306) middle, and 9.6% (n=37) high.

Table 1: Sociodemographic characteristics of the respondents (N = 384).

Characteristic	Category	Frequency (%)
Gender	**Male**	**187 (48.7%)**
	Female	**197 (51.3%)**
Age (years)	**18 – 25**	**183 (47.7%)**
	26 – 35	**65 (16.9%)**
	36 – 45	**62 (16.1%)**
	>45	**74 (19.3%)**
Nationality	**Saudi**	**358 (93.2%)**
	Non-Saudi	**26 (6.8%)**
Marital status	**Single**	**202 (52.6%)**
	Married	**163 (42.4%)**
	Divorced	**17 (4.4%)**
	Widowed	**2 (0.5%)**
Occupation	**Unemployed**	**24 (6.2%)**
	Student	**168 (43.8%)**
	Governmental employee	**99 (25.8%)**
	Private employee	**45 (11.7%)**
	Businessperson	**8 (2.1%)**
	Looking for a job	**20 (5.2%)**
	Retired	**20 (5.2%)**
Health insurance	**No**	**274 (71.4%)**
	Yes	**110 (28.6%)**

Residence	**City**	**338 (88.0%)**
	Rural	**46 (12.0%)**
Income level	**Low**	**41 (10.7%)**
	Middle	**306 (79.7%)**
	High	**37 (9.6%)**

General Assessment of Lumbar Puncture Familiarity:

Table 2 provides an overview of LP familiarity among participants. 65.1% (n=250) had heard of lumbar puncture, while only 9.1% (n=35) had personal experience with the procedure. Additionally, 17.7% (n=86) reported that a family member had undergone LP. Concerning fears, 50.3% (n=193) expressed a fear of injections in the hand, whereas a higher proportion, 77.3% (n=297), feared injections in the vertebral column (VC).

Table 2: General assessment about Lumbar Puncture Familiarity.

Characteristic		Frequency	Percentage
Hearing about lumbar puncture	**Yes**	**250**	**65.1%**
	No	**134**	**34.9%**
Experience of lumbar puncture	**Yes**	**35**	**9.1%**
	No	**349**	**90.9%**
Family member experience of lumbar puncture	**Yes**	**86**	**17.7%**
	No	**316**	**82.3%**
Being afraid of needle or injection on hand	**Yes**	**193**	**50.3%**
	No	**191**	**49.7%**
Being afraid of needle or injection on VC	**Yes**	**297**	**77.3%**
	No	**87**	**22.7%**
VC: vertebral column.			

Participants' Knowledge of Lumbar Puncture:

Figure 1 illustrates the levels of knowledge among participants. Over half of the participants (52.1%, n=200) had a "Poor" knowledge score (below 50%), while 42.4% (n=163) achieved a "Good" knowledge score (between 50% and 75%). Only 5.5% (n=21) of participants attained an "Excellent" knowledge score (above 75%). The scores ranged from a minimum of 2 to a maximum of 14, with a median score of 8 and a range of 12.

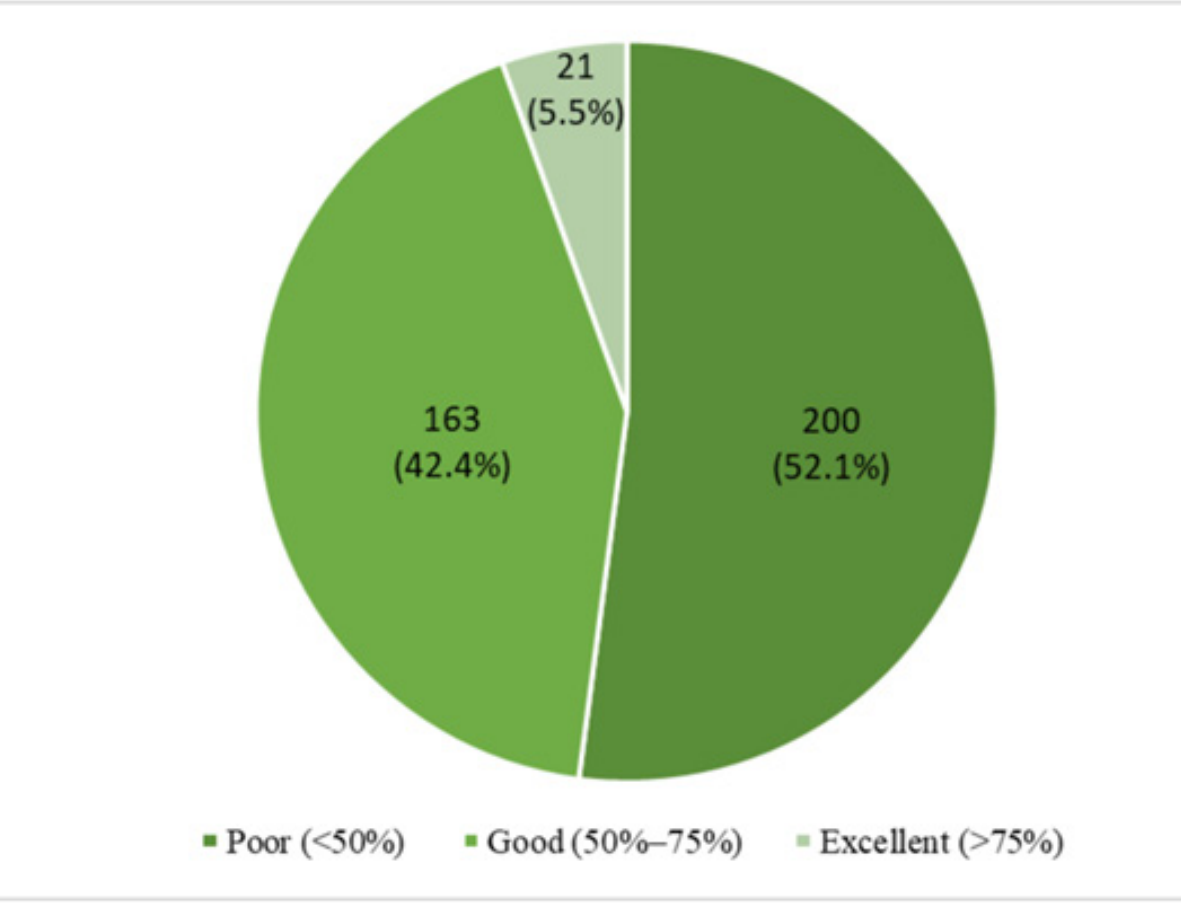


Figure 1: The Overall participant's Knowledge of Lumbar Puncture.

Participants' Attitude Towards Lumbar Puncture:

Table 3 presents participants' attitudes towards lumbar puncture (LP). Notably, 61.5% (n=236) agree that society cannot fully accept the LP procedure, while 59.1% (n=227) disagree with the statement that LP is unsafe. A significant portion, 74.2% (n=285), believe society lacks understanding of LP's diagnostic importance. Contrarily, 59.1% (n=227) disagree that no further education on LP is needed. When facing an LP recommendation, 24.1% (n=92) would prefer discharge against medical advice. Still, a substantial 83.6% (n=321) desire a detailed explanation of the procedure; 76.8% (n=295) support obtaining informed consent from patients or their first-degree relatives. Acceptance of LP by signing a consent letter stands at 67.7% (n=260). Conversely, 36.8% (n=141) prefer prolonged treatment over LP. Lastly, 49.4% (n=190) would not refuse LP due to religious beliefs, showcasing a positive attitude towards the procedure.

Table 3: Living arrangements and financial status of participant's.

Attitude question	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
1. In your opinion, our society still cannot accept LP procedure completely.	81 (21.1%)	155 (40.4%)	121 (31.5%)	26 (6.8%)	1 (0.3%)
2. LP is not safe and should be avoided.	37 (9.6%)	52 (13.5%)	68 (17.7%)	128 (33.3%)	99 (25.8%)
3. In your opinion, society doesn't know the importance of LP as diagnostic method.	115 (29.9%)	170 (44.3%)	85 (22.1%)	10 (2.6%)	4 (1.0%)
4. Our society doesn't need more education about LP.	37 (9.6%)	52 (13.5%)	68 (17.7%)	128 (33.3%)	99 (25.8%)
5. If a doctor tells me that I need LP, I prefer to be discharged at my own risk.	32 (8.3%)	60 (15.6%)	130 (33.9%)	103 (26.8%)	59 (15.4%)
6. If a doctor tells me that I need LP, I want him or her to explain the procedure.	217 (56.5%)	104 (27.1%)	50 (13.0%)	9 (2.3%)	4 (1.0%)
7. Informed consent to carry out LP should be obtained from patients or their first-degree relatives.	187 (48.7%)	108 (28.1%)	76 (19.8%)	8 (2.1%)	5 (1.3%)
8. If a doctor said you should proceed with LP to diagnose your disease, you will agree by signing the consent letter.	108 (28.1%)	152 (39.6%)	100 (26.0%)	16 (4.2%)	8 (2.1%)
9. I rather undergo other treatment for a long time than diagnosing my disease by carrying out LP.	39 (10.2%)	102 (26.6%)	135 (35.2%)	77 (20.1%)	31 (8.1%)
10. I would refuse to do LP due to my religious belief as my elders don't allow me to do so.	29 (7.6%)	61 (15.9%)	104 (27.1%)	105 (27.3%)	85 (22.1%)

Figure 2 shows the overall attitude scores: 74.7% (n=287) of participants had good attitudes, 16.1% (n=62) had poor attitudes, and 9.1% (n=35) had excellent attitudes.

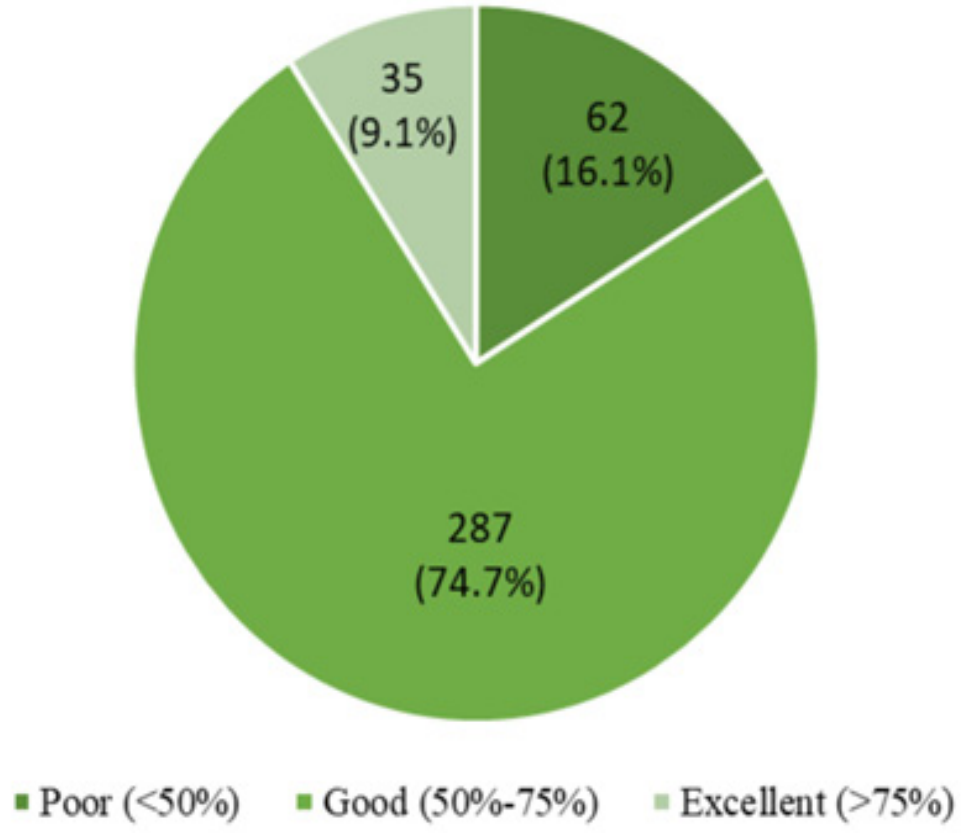


Figure2: The Overall participants Attitude of Lumbar Puncture.

Association Between Participants' Knowledge and Demographical Factors:

Table 4 shows the association between participants' knowledge of LP and various demographic factors. Gender did not significantly affect knowledge levels, with p=0.37. However, age demonstrated a significant impact, with younger participants (18–25 years) showing higher knowledge levels compared to older age groups (p<0.001). Marital status also affected knowledge, with singles exhibiting better knowledge than married individuals (p=0.002). Occupational status was significantly associated with knowledge, with students having the highest knowledge levels (p<0.001). Health insurance status showed a significant correlation, with those without insurance having better knowledge (p=0.004). Nationality, residence, and income level did not show significant differences in knowledge levels, with p-values of 0.65, 0.79, and 0.51, respectively.

Table 4. The association between participants' knowledge of lumber puncture and demographical factors

Characteristic	Participants' level of knowledge			P-Value
	Excellent	Good	Poor	
Gender				
Male	9 (42.9%)	79 (48.5%)	109 (54.5%)	0.37
Female	12 (57.1%)	84 (51.5%)	91 (45.5%)	
Age (years)				
18 – 25 years	15 (71.4%)	95 (58.3%)	73 (36.5%)	< 0. 001*
26 – 35 years	2 (9.5%)	17 (10.4%)	46 (23.0%)	
36 – 45 years	1 (4.8%)	19 (11.7%)	42 (21.0%)	
More than 45 years	3 (14.3%)	32 (19.6%)	39 (19.5%)	
Nationality				
Saudi	21 (100%)	156 (95.7%)	181 (90.5%)	0.65
Non-Saudi	0 (0.0%)	7 (4.3%)	19 (9.5%)	
Marital status				
Single	17 (81.0%)	100 (61.3%)	85 (42.5%)	0.002*
Married	4 (19.0%)	57 (35.0%)	102 (51.0%)	
Divorced	0 (0.0%)	5 (3.1%)	12 (6.0%)	
Widowed	0 (0.0%)	1 (0.6%)	1 (0.5%)	
Occupation				
Unemployed	1 (4.8%)	10 (6.1%)	13 (6.5%)	< 0. 001*
Student	15 (71.4%)	91 (55.8%)	62 (31.0%)	
Governmental employee	3 (14.3%)	37 (22.7%)	59 (29.5%)	
Private employee	1 (4.8%)	10 (6.1%)	34 (17.0%)	
Businessperson	0 (0.0%)	3 (1.8%)	5 (2.5%)	
Looking for a job	0 (0.0%)	6 (3.7%)	14 (7.0%)	
Retired	1 (4.8%)	6 (3.7%)	13 (6.5%)	
Health insurance				
Yes	5 (23.8%)	33 (20.2%)	72 (36.0%)	0.004*
No	16 (76.2%)	130 (79.8%)	128 (64.0%)	
Residence				
City	19 (90.5%)	145 (89.0%)	174 (87.0%)	0.79
Rural	2 (9.5%)	18 (11.0%)	26 (13.0%)	
Income level				
Low	1 (4.8%)	16 (9.8%)	24 (12.0%)	0.51
Middle	17 (81.0%)	128 (78.5%)	161 (80.5%)	
High	3 (14.3%)	19 (11.7%)	15 (7.5%)	
*** Represent statistical significance data as p value of < 0.05.**				

Discussion:

The findings of our study highlight a considerable knowledge gap regarding LP among the general population of Makkah, Saudi Arabia. While more than half of the participants demonstrated poor knowledge, the overall attitude toward LP was notably positive, reflecting an openness to accept the procedure if appropriately educated. This duality of low knowledge yet moderate-to-positive attitudes aligns with patterns observed in several regional and international studies, underscoring the universal need for better public education on LP.

Our finding that 52% of participants exhibited poor knowledge is consistent with studies across Saudi Arabia and globally. For example, Aldayel and Abdulrahman Yousef in Riyadh reported that over 80% of participants had poor knowledge of LP, demonstrating that lack of awareness is widespread even within urban settings[10]. Although our study showed a slightly higher proportion (5.5%) of individuals with excellent knowledge compared to the 2.4% reported in Riyadh[10], this still reflects a substantial knowledge deficit. Regional variations in health literacy, educational campaigns, and exposure to healthcare services may partly explain this discrepancy. Internationally, an Iranian study similarly revealed that 92% of neurology clinic patients lacked adequate understanding of LP[12], confirming that insufficient knowledge is not confined to Saudi Arabia but is a broader global challenge.

When comparing demographic factors influencing LP knowledge, our study revealed a significant correlation between age and understanding of LP, whereas no such correlation was observed in a Zambian study focusing on caregivers of pediatric patients with suspected CNS infections[11]. This contrast may stem from differences in study populations and healthcare literacy levels. In our study, older individuals may have had more exposure to medical information or previous healthcare encounters, whereas in Zambia, where healthcare access and education may be limited, age did not appear to influence knowledge. Similarly, our study did not find a meaningful relationship between income level and knowledge, diverging from Masood et al., who suggested a higher refusal rate among those with lower socioeconomic status[13]. This suggests that socioeconomic determinants may influence LP acceptance differently across regions depending on healthcare accessibility and cultural perceptions.

Our exploration of nationality as a factor affecting LP awareness revealed no significant association, which differs from findings in Kuwait where non-Arab

parents were more likely to accept LP than Arab parents[14]. This indicates that cultural background and nationality may influence acceptance more strongly in some contexts than others. In Makkah, a city with a diverse resident and transient population due to the influx of pilgrims, cultural homogenization and shared exposure to local healthcare services may explain why nationality did not emerge as a significant factor.

Occupation, however, was significantly linked to better knowledge and more positive attitudes toward LP in our study. Participants employed in sectors with greater access to health-related information demonstrated higher awareness. This aligns with findings from China, where occupation type correlated with favorable attitudes toward medical procedures among non-medical workers[15]. Such occupational exposure may enhance understanding through indirect learning or better access to credible health information, highlighting the potential value of workplace-based health education initiatives.

Fear of LP emerged as a key theme influencing attitudes in our study. Even among participants without direct experience of the procedure, anxiety about needle insertion near the spine was prevalent. This finding resonates with observations in Riyadh[10] and in Malaysia, where fear and misconceptions about LP's invasiveness and potential complications contributed significantly to hesitancy[16]. Such fears, particularly the belief that LP causes paralysis, are consistently reported in the literature and represent one of the most significant barriers to acceptance. Addressing these fears through clear physician communication, visual aids, and public campaigns can help demystify the procedure.

Despite limited knowledge, attitudes toward LP in Makkah were largely positive, with an overall favorable attitude score of 74.7%. Participants expressed a willingness to learn more about LP and recognized its potential importance when recommended by a physician. Similar attitudes were reported in Riyadh, where most participants expressed readiness to undergo LP if adequately informed[10]. However, reluctance still existed, particularly when participants were presented with the idea of undergoing alternative treatments instead of LP, reflecting a lingering mistrust of invasive procedures.

The need for public education was strongly emphasized by participants, with nearly 60% disagreeing with the notion that "our society does not need more education about LP." This aligns with findings from Malaysia, where participants voiced a strong demand for more information and awareness regarding LP[16]. Such

findings collectively indicate a widespread recognition of the knowledge gap, offering an opportunity for targeted educational programs to improve public confidence.

When comparing our findings to parental attitudes in pediatric settings, similarities and differences emerge (17-20). For example, Alshaibari et al. in Najran found that 44% of mothers refused LP for their children, mainly due to fear of paralysis[20]. This is remarkably similar to the UAE studies by Narchi et al. (17, 18), where 44% of parents declined LP, with fear and misconceptions accounting for 80% of refusals. In our study, although we focused on the general population rather than parents of hospitalized children, fear remained a prominent concern. However, unlike pediatric settings where parents must make urgent decisions for their children, adults in our population showed more openness to LP if adequately informed, suggesting that proactive education might have a more significant impact in non-emergency contexts.

Interestingly, refusal rates appear to vary widely across regions. In Turkey, Acoglu et al. reported that although 65% of parents lacked prior knowledge of LP, only 4.7% refused the procedure[19]. This contrasts sharply with the high refusal rates in Najran (44%) (20) and the UAE (44%)[17,18]. The lower refusal in Turkey suggests that despite knowledge gaps, trust in medical professionals may play a decisive role. In our study, participants also highlighted the importance of physician communication in shaping their willingness to accept LP, supporting the idea that building trust between healthcare providers and patients is crucial.

Our findings also align the importance of physician counseling in overcoming hesitancy. In Najran, mothers who accepted LP for their children were significantly influenced by physician recommendations ($p<0.001$)[20]. Similarly, Narchi and colleagues found that parents might consent to LP only if their child's condition worsened, emphasizing the role of perceived medical necessity[18]. These parallels reinforce the importance of healthcare provider communication as a determinant of LP acceptance.

This study contributes unique insights by being the first to assess public knowledge and attitudes toward LP specifically in Makkah, a city with a distinctive demographic profile due to its role as a global pilgrimage center. The diverse population in Makkah may have contributed to the observed variation in knowledge and attitudes, highlighting the need for tailored, culturally sensitive educational interventions. However, some limitations must be acknowledged. Our study was limited to a single urban area,

restricting generalizability to rural settings or other regions with different cultural and educational profiles. Additionally, the reliance on self-reported questionnaires introduces potential biases such as social desirability and recall inaccuracies.

Future studies should consider mixed-method approaches, combining quantitative surveys with qualitative interviews to capture deeper insights into cultural beliefs and personal experiences shaping LP perceptions. Targeted education, physician counseling, and community workshops can dispel myths and highlight LP's benefits. Despite limited knowledge, positive attitudes in Makkah suggest education can improve acceptance, echoing findings from Saudi Arabia, UAE, Turkey, and Malaysia on fear and physician communication.

Conclusion:

This study reveals a significant gap in knowledge about LP among the general population of Makkah, Saudi Arabia, despite a generally positive attitude towards the procedure. While most participants demonstrated limited understanding, their willingness to learn more about LP indicates an opportunity for targeted educational interventions. Addressing this knowledge gap through enhanced public awareness and educational programs is crucial to improving overall understanding and acceptance of LP. This study underscores the need for comprehensive health education initiatives to ensure informed decision-making and better healthcare outcomes. Future research should explore the factors influencing public perceptions and refine strategies to educate the community effectively.

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Declaration of interest:

The authors declared no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

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