ORIGINAL ARTICLE

What New Mothers Endure: Burden of Physical Postpartum morbidities and its determinants among recently delivered women, evidence from a hospital-based cross-sectional study in Kanpur

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CITATION

Sachan S, Nigam S, Midha T, Barman SK, Varma P, Kaur S. "What New Mothers Endure: Burden of Physical Postpartum morbidities and its determinants among recently delivered women, evidence from a hospital-based cross-sectional study in Kanpur. Indian J Comm Health. 2025;37(5):735-741.

https://doi.org/10.47203/IJCH.2025.v37i05.016

ARTICLE CYCLE

Received: 15/09/2025; Accepted: 18/10/2025; Published: 31/10/2025

ABSTRACT

Background: The postpartum period, often referred to as the "fourth stage of labor," is critical for maternal recovery; however, it remains underprioritized in many low- and middle-income countries. **Aims and Objectives**: This study aimed to assess the burden of physical postpartum morbidities and identify associated sociodemographic and obstetric factors among recently delivered women (RDW) in Kanpur, Uttar Pradesh. **Methodology:** A hospital-based cross-sectional study was conducted among 560 RDW within six months of delivery attending the immunization clinic of a tertiary care hospital. Study participants were selected using systematic random sampling. Data were collected using a pre-tested, semi-structured interview schedule covering sociodemographic details, obstetric history, and postpartum health status, and were analyzed using appropriate statistical methods to determine associations. **Results:** Back pain (54.1%) and anemia (51.3%) were the most prevalent postpartum morbidities. Other commonly reported conditions included excessive vaginal bleeding (19.1%), white discharge (15.4%), urinary incontinence (4.5%), and breast-related problems such as engorgement (3.0%) and infection (1.4%). Perineal pain (2.5%) and perineal tears (1.9%) were notable local morbidities. Significant associations were observed between postpartum morbidities and parity, socioeconomic status, antenatal care visits, birth spacing, and mode of delivery ($p < 0.05$). **Conclusion:** The high burden of postpartum morbidities highlights the need for comprehensive and sustained postnatal care extending beyond childbirth, with focused interventions and increased awareness to improve maternal physical health.

KEYWORDS

Postpartum Period; Maternal Morbidity; Postnatal Care; Anemia; Cesarean Section; Cross-Sectional Studies

INTRODUCTION

The postpartum period is recognized by the World Health Organization as the most critical yet neglected phase in the lives of mothers and newborns (1). Often referred to as the "fourth stage of labor," it encompasses the acute (first 6–12 hours), subacute (2–6 weeks), and delayed phases (up to six months), during which women undergo significant physiological, psychological, and social changes (2). Despite improvements in institutional delivery and maternal mortality reduction, postpartum health continues to receive inadequate attention, particularly in low- and middle-income countries.

While obstetric care has traditionally focused on preventing mortality from hemorrhage,

hypertensive disorders, and sepsis, many non-life-threatening but disabling postpartum morbidities remain underrecognized (3). These include anemia (15), infections (5), excessive vaginal bleeding (4), perineal pain, urinary incontinence (11), breastfeeding problems (12), hemorrhoids (13), and mental health concerns (6). Many of these conditions may manifest weeks or months after delivery, when women are no longer in routine contact with healthcare services (16).

Recent global evidence indicates that a substantial proportion of women continue to suffer from physical morbidities such as back pain and genitourinary symptoms well beyond six weeks postpartum (17). Although India has achieved a reduction in maternal mortality (3), region-specific data on postpartum morbidity are limited. This study was therefore undertaken to assess the burden of physical postpartum morbidities and their determinants among recently delivered women attending a tertiary care hospital in Kanpur.

Aims & Objectives:

- **To** determine the burden of postpartum maternal morbidity among women attending tertiary care hospital in Kanpur.
- To Identify the socio-demographic and obstetric factors associated with postpartum morbidity.

MATERIAL & METHODS

Study Type and Study Design: A hospital-based cross-sectional study was conducted to assess physical postpartum morbidities among recently delivered women.

Study Setting: The study was carried out at the Immunization Clinic run by the Department of Pediatrics, Lala Lajpat Rai (LLR) Hospital, Ganesh Shankar Vidyarthi Memorial Medical College (GSVMMC), Kanpur, Uttar Pradesh.

Study Population: The study population comprised Recently Delivered Women (RDW), defined as women who had delivered within the last six months and were aged 18 years and above, attending the immunization clinic during the study period.

Study Duration: Data collection was conducted over a period of six months.

Sample Size Calculation: Sample size was calculated by using the Cochran's formula N=Z2PQ/d2 where Z2=3.84, P =5.6% (Prevalence of perineal morbidity which was least prevalent was derived from a pilot study done at immunization clinic of District Hospital Kanpur) , Q= 100-P (%) d= Absolute error d=2% , Adding non response rate of 10%, the minimum sample size was calculated to be 557 which was rounded off to 560.

Inclusion Criteria

- Recently delivered women within six months of delivery
- Age ≥18 years
- Attending the immunization clinic during the study period
- Willing to provide informed written consent

Exclusion Criteria

- Women suffering from major medical or surgical illnesses
- Women unwilling to participate in the study

Strategy for Data Collection: Systematic random sampling was used. On average, 10–12 postpartum women attended the immunization clinic daily, with an estimated total of 1,500 women over six months. To achieve the required sample size of 560, a sampling interval (k) of 2.6 was calculated (1500/560); therefore, every third eligible woman was included in the study.Before the interview, the study participants were clearly explained the purpose and objectives of the study, and informed consent was obtained. The questionnaire was briefly introduced, and participants' medical queries were addressed at the end of the interview. The interview schedule collected information on the socio-demographic profile, obstetric history, details of the index delivery, and physical health status, including findings from general physical examination and morbidity details.

Ethical Issues and Informed Consent: Ethical approval was obtained from the Institutional Ethics Committee of GSVM Medical College, Kanpur, Uttar Pradesh (Ref No. EC/BMHR/2023/91). Written informed consent was obtained from all participants prior to data collection, and confidentiality was maintained.

Data Analysis: Data were coded and entered into Microsoft Excel and analyzed using the Statistical Package for Social Sciences (SPSS) software. Descriptive statistics were expressed as frequencies and percentages. Associations between postpartum morbidities and selected sociodemographic and obstetric variables were assessed using the Chi-square test. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1: Distribution of Study Subjects according to biosocial profile (N=560)

Age	No
18 – 21 years	46(8.3)
22 – 30 years	397(70.8)
>30 years	117(20.9)
Residence	
Urban	292(52.1)
Rural	268(47.9)

Age	No
Religion	
Hindu	483(86.3)
Muslim	59(10.5)
Others	18(3.3)
Caste	
General	239(42.7)
OBC	214(38.2)
SC/ST	107(19.1)
Type of family	
Joint	258(46.1)
Nuclear	302(53.9)
Occupation of study subject	
Working	55(9.8)
housewife	505(90.2)
Occupation of Husband of study subjects	
Professional	72(12.9)
Semi-professional	39(7.0)
Clerk/Shop/farmer	244(43.6)
Skilled/ semiskilled worker	106(18.9)
Unskilled worker	88(15.7)
Unemployed	11(2.0)
Educational qualification of subject	
Post graduate	21(3.8)
Graduation	234(41.8)
Intermediate	149(26.6)
High school	53(9.5)
Middle school	53(9.5)
Primary school	28(5.0)
Illiterate	22(3.9)
Educational qualification of husband	
Postgraduate	66(11.8)
Graduation	290(51.8)
Intermediate	101(18.0)
High school	61(10.9)
Middle school	13(2.3)
Primary school	10(1.8)
Illiterate	19(3.4)
Socioeconomic Status *	
Upper class	245(43.8)
Upper Middle Class	113(20.2)
Middle Class	77(13.8)
Lower Middle class	93(16.6)
Lower class	32(5.7)

** Modified BG Prasad scale 2024*

A total of 560 postpartum women participated in this hospital-based study conducted in Kanpur, Uttar Pradesh. Majority of women (70.8%) were aged between 21 and 30 years. Regarding education, 3.9% were illiterate, while 41.8 % had completed graduation. Majority of them were housewives (90.2 %) and belonged to upper (43.8%) or upper-middle socioeconomic classes (20.2 %). Nuclear families predominated (53.9 %).(Table 1)

Table 2: Distribution of study subjects according to obstetric components (N=560)

Variables	No
No of years after marriage first child was born	
≤ 2 years	482(86.1)
> 2 years	78(14.1)
Parity	
Primipara	219(39.1)
Multipara	341(60.9)
Total children alive	
≤ 2 children	467(83.3)
> 2 children	93(17.7)
History of abortion	
Present	82(14.6)
Absent	478(85.4)
Birth spacing	
≤ 3 years	216(38.6)
>3 years	98(17.5)
First child	246(43.9)
No of ANC visits	
< 4 visits	165(29.5)
≥ 4 visits	395(70.5)
Gender of the baby	
Male	277(49.5)
Female	283(50.5)
Place of delivery	
Institutional delivery	554(98.9)
Home delivery	6(1.1)
Mode of delivery	
Vaginal	386(68.7)
Caesarean	174(31.3)

In terms of obstetric history, the majority of study participants had their first child born within < 2 years of marriage (86.1%) ,60.9 % were multigravida, and 70.5 % had attended at least four antenatal care visits during their last pregnancy. Institutional deliveries were reported in 98.9 % of cases. Vaginal deliveries accounted for 68.7 %, while 31.3 % underwent cesarean section.(Table 2)

Figure 1 shows the prevalence of diabetes (2%), hypertension (6.4%), and hypothyroidism (5.9%) among participants. Anaemia was present in 51.3% of study participants. Fever (due to UTI, wound infection, uterine infection) was reported by 7.8 % of subjects.

Figure 1 : Morbidity profile of the study subjects

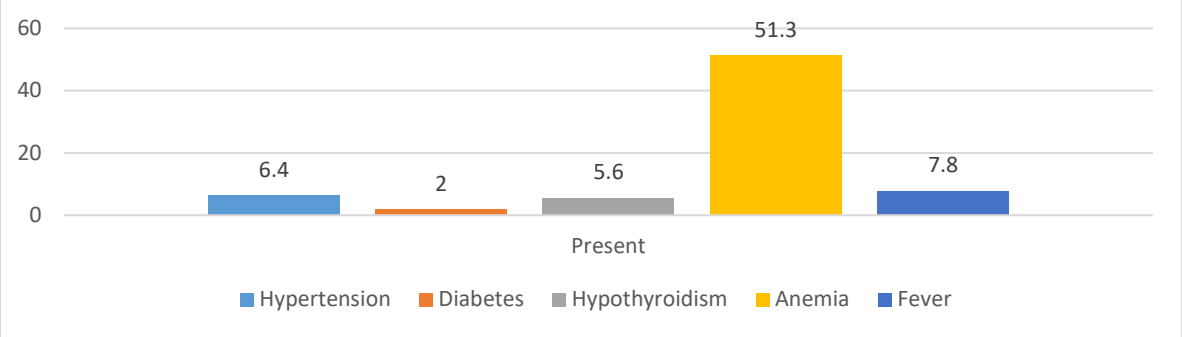

Figure 2: Morbidity profile among study subjects

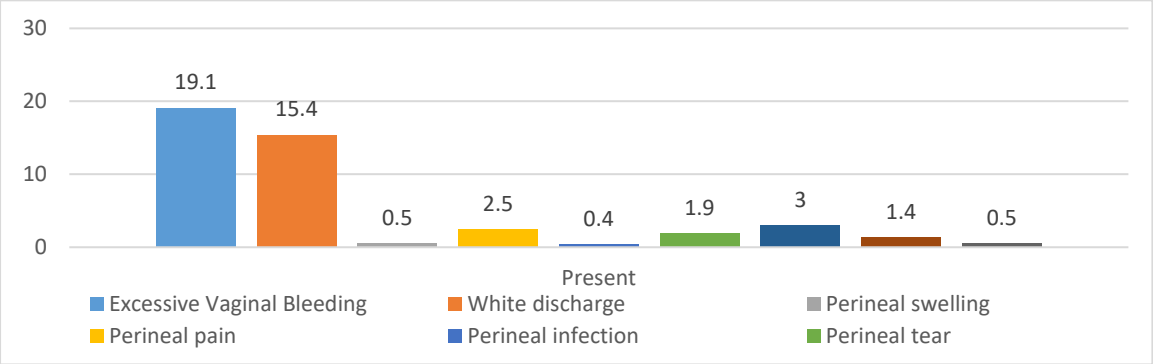

Figure 2 illustrates the vaginal, perineal and breast morbidity profile among the study subjects. The most reported morbidity was excessive vaginal bleeding, observed in 19.1% of participants, followed by white discharge in 15.4%. Other reported morbidities included breast engorgement (3%), perineal pain (2.5%), perineal tear (1.9%), and breast infection (1.4%). Less frequently reported conditions were perineal swelling (0.5%), retracted nipple (0.5%), and perineal infection (0.4%).

Figure 3 : Morbidity profile of study subjects

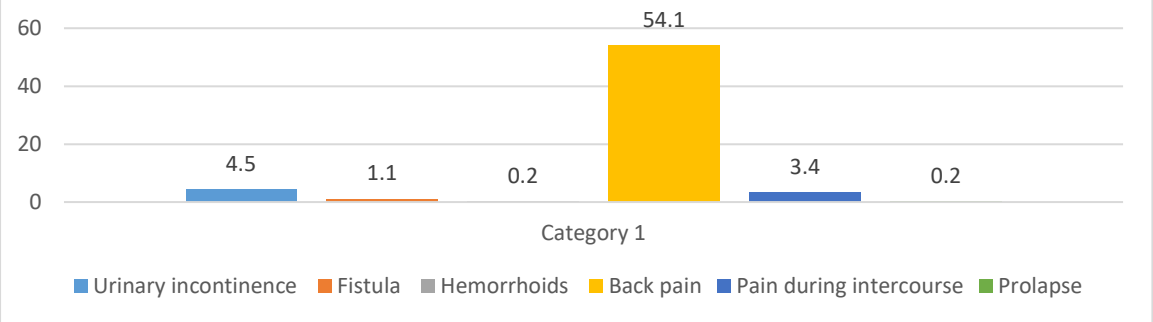

Figure 3 shows burden of other morbidities like majority of subjects had back pain (54.1 %) followed by urinary incontinence (4.5 %), pain during intercourse (3.4%), fistula (1.1%), prolapse (0.2%) and hemorrhoids (0.2 %).

Table 3 : Occurrence of postpartum morbidities by selected sociodemographic and obstetric components of subjects.

	Variables	Hypertension No (%)	Anemia No (%)	Vaginal morbidity No (%)	Perineal morbidity No (%)	Fever No (%)	Breast morbidity No (%)	Other morbidity No (%)
Age	18-30 years (443)	25(5.6)	227(51.2)	148(33.4)	30(6.7)	45(10.1)	26(5.8)	270(60.9)
	> 30 years (117)	11(9.4)	58(49.5)	46(39.3)	5(4.2)	13(11.1)	6(5.1)	78(66.6)
	p value	0.14	0.748	0.232	0.177	0.763	0.759	0.335
Socioeconomic status	Upper (245)	15(6.1)	116(47.3)	47(19.1)	12(4.8)	14(5.7)	10(4)	169(68.9)
	Middle (315)*	21(6.6)	159(50.4)	147(46.6)	22(6.9)	44(13.9)	22(6.9)	178(56.5)
	p value	0.667	0.066	0.001	0.371	0.002	0.125	0.003
Parity	Primipara (219)	18(8.2)	95(43.3)	64(29.2)	15(6.8)	23(10.5)	14(6.3)	135(61.6)

	Variables	Hypertension No (%)	Anemia No (%)	Vaginal morbidity No (%)	Perineal morbidity No (%)	Fever No (%)	Breast morbidity No (%)	Other morbidity No (%)
	Multipara (341)	18(5.2)	190(55.7)	130(38.1)	19(5.5)	35(10.2)	18(5.2)	212(62.1)
	p value	0.166	0.004	0.031	0.537	0.928	0.579	0.9
No of ANC visits	< 4 visits (165)	9(5.4)	93(56.3)	55(33.3)	10(6)	20(12.1)	7(4.2)	101(61.2)
	> = 4 visits (395)	27(6.8)	192(48.6)	139(35.1)	24(6)	38(9.6)	25(6.3)	243(61.5)
	p value	0.544	0.094	0.674	0.994	0.376	0.03	0.737
Birth spacing	0-3 years (216)	10(4.6)	130(60.1)	89(41.2)	15(6.9)	28(12.9)	11(5)	136(62.9)
	>3 years (98)	8(8.4)	52(53.0)	33(33.6)	5(5.1)	10(10.2)	6(6.1)	62(63.2)
	p value	0.372	0.001	0.026	0.774	0.235	0.881	0.833
Mode of delivery	Vaginal (386)	20(5.6)	193(50)	141(36.5)	28(7.2)	42(10.8)	26(6.7)	173(44.8)
	Caesarean (174)	16(9.1)	89(51.1)	50(28.7)	6(3.4)	16(9.1)	6(3.4)	174(100)
	p value	0.073	0.935	0.162	0.081	0.545	0.006	0.001

** lower middle class was pooled into middle class*

Table 3 shows the association between maternal morbidities and selected demographic and obstetric factors. Maternal age was not significantly associated with any morbidity, indicating comparable health problems among women aged 18–30 years and those above 30 years.Socioeconomic status showed a significant association with postpartum morbidities. Women from the middle socioeconomic group had higher prevalence of vaginal morbidity (p = 0.001), fever (p = 0.002), and long-term morbidity (p = 0.003) compared to those from the upper group. Parity was also significant, with anemia (p = 0.004) and vaginal morbidity (p = 0.031) being more common among multiparous women.Antenatal care utilization was significantly associated with breast morbidity (p = 0.030), with higher reporting among women who had ≥4 ANC visits. Shorter birth intervals (0–3 years) were significantly associated with anemia (p = 0.001) and vaginal morbidity (p = 0.026).

Mode of delivery showed a significant association with breast morbidity (p = 0.006) and long-term morbidity (p = 0.001). Breast-related problems were more frequent following vaginal delivery, while long-term morbidities, particularly back pain, were more commonly reported after caesarean section**.**

DISCUSSION

The present study provides a comprehensive view of the biosocial, obstetric, and health profiles of postpartum women, highlighting several key morbidities during the postnatal period.

The majority of study participants (70.8%) belonged to the age group of 22–30 years, aligning with the common reproductive age range. This finding is comparable to Iyengar et al. (2012)[20], who found that most participants were aged 20–29 years, and Vyas et al. (2016)[19], who reported 44.1% in the 24–29 years group. These results reinforce the notion that this age group remains central to maternal health interventions, particularly during and after childbirth. Furthermore, 90.2% of the women in our study were housewives, reflecting a socio-cultural trend of limited workforce engagement during the postpartum period. This is consistent with Vyas et al. (2016)[19], who found that 85.2% of their participants were not employed. Economic dependence and domestic responsibilities could affect access to healthcare, decision-making power, and overall well-being during the postnatal phase.

A high proportion (98.9%) of institutional deliveries was observed, indicating significant utilization of healthcare facilities. This aligns with findings from Vyas et al. (2016)[19] (99.6%) and suggests improved accessibility of maternal health services. However, in contrast, Iyengar et al. (2012)[20] reported only 69.2% institutional deliveries, highlighting that such improvements may have occurred over time or differ by region.

Among physical health morbidities, hypertension was reported by 6.4% of participants. This is in line with Ferdous et al. (2012)[21], who found 5.1% prevalence, though it was lower (1.1%) in the study by Iyengar et al. (2012)[20]. The variation could be attributed to differences in study populations or healthcare monitoring practices. Postnatal anemia was identified in 51.3% of subjects, suggesting a significant nutritional and health concern. This is supported by Ramya et al. (2019)[14], who reported a higher prevalence (76.2%), and Somen et al. (2022)[22], who reported a lower rate (26%). The findings highlight the need for effective anemia prevention and treatment strategies, including iron supplementation and dietary counselling during the antenatal and postnatal periods.

Regarding vaginal morbidities, excessive bleeding was reported in 19.1% of participants, consistent with Uzma et al. (2018)[23] (22%) and higher than Vyas et al. (2016)[24] (11.3%). Excessive bleeding can increase the risk of anemia and maternal morbidity if not managed promptly. White discharge was present in 15.4% of subjects, slightly lower than the 22% reported by Uzma et al. (2018)[23], possibly indicating improved hygiene practices or early diagnosis of infections.

Fever during the postpartum period was observed in 8.5% of participants, a finding similar to Iyengar et al. (2012)[20] (4%), but significantly lower than Uzma et al. (2018)[23] (36%). Identified causes included wound infection (3.8%), urinary tract infections (3.1%), uterine infections (0.9%), and other conditions such as ARI and tuberculosis. These findings emphasize the importance of postpartum monitoring for infection-related symptoms and the timely use of antibiotics when needed.

Perineal morbidity was also common. Perineal pain, the most frequently reported issue (2.9%), is comparable to Iyengar et al. (2012)[20] (2.8%), though Vyas et al. (2016)[19] and Uzma et al. (2018)[23] reported higher incidences. Breast engorgement (3.6%) was another prevalent concern, consistent with Vyas et al. (2016)[19] (5.9%) and Iyengar et al. (2012)[20] (2.9%), highlighting challenges in early breastfeeding and milk flow regulation.

Back pain was the most reported long-term issue, affecting 57.7% of participants. This aligns with Ferdous et al. (2012)[21] (59.3%) and underscores the physical strain of pregnancy, delivery, and postpartum caregiving. Urinary incontinence (4.5%) was notably higher than rates reported by Iyengar et al. (0.1%) and Vyas et al. (1.4%), but lower than that of Radhika et al. (2023)[11] (22%). Pain during intercourse (3.4%), fistula (1.1%), prolapse (0.2%), and hemorrhoids (0.2%) were also reported, each contributing to the long-term morbidity burden.

This study presents several **important strengths**. It offers a detailed examination of physical health issues encountered by women during the postpartum period. By assessing a wide range of conditions such as anemia, hypertension, excessive bleeding, perineal and breast morbidities, and long-term problems like back pain and urinary incontinence, the study delivers a broad perspective on maternal postpartum health.

Conclusion

This study brings attention to the often-overlooked physical struggles many women face after childbirth. The high prevalence of conditions such as anemia, hypertension, perineal and breast complications, back pain, and urinary incontinence shows that a mother's need for care does not end with delivery. Ongoing, compassionate postnatal support is essential. Regular follow-ups, early detection, and open conversations about common postpartum health issues can empower women to seek help without fear or stigma. Ensuring access to care, especially in underserved communities, and recognizing postpartum health as a continued priority in healthcare policy are crucial steps toward supporting women's well-being during this vulnerable and transformative time.

Recommendation

Postnatal care should extend beyond childbirth to include routine screening and early management of common physical postpartum morbidities. Integrating maternal health assessment with child immunization visits and strengthening counseling on nutrition, birth spacing, and breastfeeding can support better maternal recovery. Training frontline health workers to identify postpartum health problems and encourage timely care-seeking is essential.

Limitation of the Study

The data collected relied on participants' self-reporting, which may lead to underreporting or inaccuracies, particularly in relation to sensitive conditions such as urinary incontinence or sexual discomfort. The study's focus on a specific region may also limit the applicability of its findings to different geographic or cultural settings.

Relevance of the Study

This study provides region-specific evidence on the burden of physical postpartum morbidities among recently delivered women in North India. It highlights that significant maternal health problems persist up to six months after delivery despite high institutional delivery rates. The findings underscore gaps in postnatal care and support the need for strengthened postpartum screening and follow-up within existing maternal health programs.

Authors Contribution

SS (Shriya Sachan) conceptualized and designed the study, conducted data collection, performed data analysis, and drafted the manuscript. SN (Seema Nigam) provided overall supervision, contributed to study design, and critically reviewed the manuscript for intellectual content. TM (Tanu Midha) assisted in methodological planning and data interpretation and reviewed the manuscript. SKB (S. K. Barman) contributed to statistical analysis and interpretation of results. PV (Punit Varma) assisted

in data collection and manuscript revision. SK (Samarjeet Kaur) contributed to literature review and critical appraisal of the manuscript. All authors read and approved the final manuscript and take responsibility for the integrity of the work.

Financial Support and Sponsorship

Nil

Conflict of Interest

None

Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors declare that **no generative artificial intelligence or AI-assisted technologies were used** in the writing or preparation of this manuscript. The manuscript was written, reviewed, and revised entirely by the authors, who take full responsibility for the accuracy, originality, and integrity of the content of the publication.

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