

Original Research Article

POSTNATAL CARE PRACTICES AND THEIR IMPACT ON MATERNAL AND NEONATAL HEALTH OUTCOMES IN URBAN SLUMS OF KURNOOL CITY

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ABSTRACT

Background: The postnatal period is a critical phase for the survival and well-being of both mother and newborn. Despite improvements in maternal healthcare services, postnatal care practices remain suboptimal among vulnerable populations, particularly those residing in urban slums. **Objectives:** To assess postnatal care practices among mothers residing in urban slums and evaluate their impact on maternal and neonatal health outcomes.

Materials and Methods: A community-based descriptive longitudinal study was conducted among **270 postpartum mothers** residing in the notified urban slums of Kurnool, Andhra Pradesh, India, between 2011 and 2012. Eligible mothers within 24 hours to six weeks after delivery were identified through Anganwadi and health workers. Data were collected using a pre-tested structured interview schedule and clinical examination during two postnatal visits. Maternal and neonatal health outcomes were assessed, and data were analyzed using Microsoft Excel and Epi Info. Associations were tested using the Chi-square test, with $p < 0.05$ considered statistically significant.

Results: The majority of mothers (60.4%) were aged 21–25 years, and 67.8% were literate. Most mothers (93.3%) had more than three antenatal visits, 95.9% received complete tetanus toxoid immunization, and 87.8% consumed ≥ 100 iron-folic acid tablets. Institutional deliveries accounted for 93.3%, while only 47.8% received postnatal home visits. Maternal anaemia (35.2%) was the most common postpartum morbidity. Acute respiratory infection (11.9%) and low birth weight (10.0%) were the leading neonatal morbidities. Breast problems were significantly associated with maternal occupation and parity, whereas low birth weight was significantly associated with socioeconomic status and parity ($p < 0.05$).

Conclusion: Although antenatal care utilization, institutional delivery, and neonatal immunization were satisfactory, gaps persisted in postnatal follow-up and maternal awareness. Strengthening community-based postnatal care, health education, and regular home visits is essential to improve maternal and neonatal health outcomes in urban slum populations.

Keywords: Postnatal care, maternal health, neonatal health, urban slums, postpartum mothers, newborn care, maternal morbidity, India.

INTRODUCTION

The postnatal period, defined as the first six weeks after childbirth, is a critical phase for both maternal and neonatal survival and well-being. Although pregnancy and childbirth receive considerable attention in maternal healthcare programs, the postnatal period remains one of the most neglected

stages of the continuum of care. It is estimated that a significant proportion of maternal and neonatal deaths occur during the first 48 hours following delivery, highlighting the importance of timely and appropriate postnatal care (PNC). Effective postnatal care includes early assessment of the mother and newborn, counseling on breastfeeding, hygiene,

nutrition, family planning, immunization, and prompt identification and management of complications.

Globally, despite substantial reductions in maternal and neonatal mortality over the past two decades, preventable deaths continue to pose a major public health challenge, particularly in low- and middle-income countries (LMICs). According to the latest estimates, approximately 287,000 women die annually due to pregnancy- and childbirth-related complications, while nearly 2.3 million neonates die within the first 28 days of life. The majority of these deaths are preventable through access to quality maternal and newborn healthcare services, including comprehensive postnatal care. The Sustainable Development Goals (SDGs), especially SDG 3, emphasize reducing maternal mortality to less than 70 per 100,000 live births and neonatal mortality to at least 12 per 1,000 live births by 2030, underscoring the need for strengthened postnatal healthcare services.^[1]

In India, notable progress has been achieved in improving institutional deliveries through initiatives such as the Janani Suraksha Yojana (JSY), Janani Shishu Suraksha Karyakram (JSSK), and the Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA). However, disparities persist in the utilization and quality of postnatal care, particularly among socioeconomically disadvantaged populations. Urban slums, characterized by overcrowding, poor sanitation, inadequate healthcare infrastructure, poverty, and limited health awareness, present unique challenges to maternal and neonatal healthcare. Despite their proximity to healthcare facilities, residents of urban slums often experience barriers such as financial constraints, cultural practices, lack of awareness, gender inequality, and poor continuity of care, resulting in suboptimal postnatal healthcare utilization.^[2,3,4]

Postnatal care practices encompass a range of behaviors including timely initiation and exclusive breastfeeding, cord care, thermal care of the newborn, maternal nutrition, personal hygiene, postpartum rest, immunization, family planning, and healthcare-seeking for maternal or neonatal danger signs. Appropriate postnatal practices have been consistently associated with reduced maternal infections, postpartum hemorrhage, neonatal sepsis, hypothermia, and mortality. Conversely, harmful traditional practices, delayed breastfeeding, inadequate hygiene, poor nutritional intake, and failure to seek timely medical attention may adversely affect both maternal recovery and neonatal survival.

Several studies have examined individual components of postnatal care in urban populations; however, evidence focusing specifically on urban slum communities remains limited. Furthermore, variations in socio-demographic characteristics, educational status, healthcare accessibility, cultural beliefs, and health system factors influence postnatal practices and subsequent health outcomes. Understanding these practices within the context of

urban slums is essential for designing targeted interventions that address existing gaps in maternal and newborn care.

Assessing postnatal care practices and their association with maternal and neonatal health outcomes provides valuable insights for healthcare providers and policymakers to strengthen community-based maternal and child health services. Evidence generated from such studies can support the implementation of focused health education programs, improve postnatal follow-up, enhance early identification of complications, and promote healthy behaviors among mothers residing in vulnerable urban settings.

Therefore, the present study aims to assess postnatal care practices among mothers residing in urban slums and to evaluate their impact on maternal and neonatal health outcomes. The findings are expected to contribute to the existing evidence base and inform strategies for improving the quality and utilization of postnatal care services in underserved urban communities.

MATERIALS AND METHODS

Study Design

A community-based descriptive longitudinal study was conducted to assess postnatal care practices and their impact on maternal and neonatal health outcomes among postpartum mothers residing in urban slums.

Study Setting

The study was conducted in the notified urban slums of **Kurnool City**, Andhra Pradesh, India. Kurnool, located at 15.83°N latitude and 78.05°E longitude, serves as the administrative headquarters of Kurnool district and is the gateway to the Rayalaseema region. The city is situated on the banks of the Tungabhadra River, with the Krishna River flowing to the north and the Hundri and Neeva rivers traversing the city. The climate is tropical, with temperatures ranging from 12°C to 45°C and an average annual rainfall of approximately 762 mm.

The study area comprised all **56 notified urban slums** with a total population of **118,587**. These slums were characterized by protected water supply, closed drainage systems, individual or community sanitation facilities, predominantly pucca or semi-pucca houses, electricity supply, and basic civic amenities. The majority of residents belonged to lower socioeconomic strata and were employed as unskilled or semi-skilled laborers.

Study Duration

The study was carried out over a period of **one year**, from **October 2011 to October 2012**. Following a pilot study, the interview schedule was modified and finalized. Quantitative data collection was undertaken between **December 2011 and May 2012**, while qualitative data were collected from **June to July 2012**. Data analysis was completed between

August and September 2012, followed by report preparation.

Study Population

The study population included postpartum mothers residing in the selected urban slums who had delivered within the previous **24 hours to six weeks**.

Inclusion Criteria

- Mothers residing in the selected urban slums.
- Mothers within **24 hours to six weeks postpartum**.
- Mothers who provided written informed consent to participate.

Exclusion Criteria

- Mothers who were seriously ill and unable to participate in the interview.
- Mothers who were not permanent residents of the study area.
- Mothers who declined to provide informed consent.

Sample Size

Based on the crude birth rate (CBR) of **17.7 per 1,000 population** (NFHS-3) and a notified slum population of **118,587**, the estimated number of postpartum women during a six-week period was **249**. To ensure adequate representation, **270 postpartum mothers** were included in the study.

Sampling Technique

A **complete enumeration method** was adopted. All eligible postpartum mothers identified during the study period in the selected urban slums were included until the required sample size was achieved. Mothers were identified with the assistance of **Anganwadi Workers (AWWs)** and health workers serving the respective slum areas.

Data Collection

Data were collected using a **pre-designed, pre-tested, and semi-structured interview proforma**. Each participant was interviewed on **two occasions**. The **first visit** was conducted within the immediate postpartum period (24 hours to six weeks after delivery) to obtain information regarding socio-demographic characteristics, obstetric history, postnatal care practices, maternal and neonatal health status, and utilization of postnatal health services. A clinical examination of both mother and newborn was performed to identify any postpartum or neonatal complications.

Maternal dietary intake was assessed using the **24-hour dietary recall method**, and calorie and protein intake were estimated using standard diet charts.

A **second follow-up visit**, conducted between **six and ten weeks postpartum**, assessed maternal and neonatal health status, occurrence of postpartum complications, breastfeeding practices, immunization status, and utilization of healthcare services.

Maternal morbidity was assessed based on mothers' self-reported symptoms using a structured checklist expressed in simple lay terminology. Open-ended questions were included to document additional

maternal or neonatal health problems not covered in the checklist.

Qualitative Component

A qualitative component was incorporated to explore perceptions and sociocultural practices related to the postpartum period.

The following qualitative methods were employed:

- **Focus Group Discussions (FGDs)** with postpartum mothers to explore perceptions regarding the postpartum period and prevailing postnatal care practices.
- **Free-listing exercises** to identify common beliefs and practices related to maternal and newborn care.
- **Key Informant Interviews (KIIs)** with healthcare providers, including doctors and Auxiliary Nurse Midwives (ANMs), to understand health system perspectives on postnatal care delivery.

Study Variables

Independent Variables

- Maternal age
- Religion
- Educational status
- Socioeconomic status
- Parity
- Type of family
- Occupation
- Mode and place of delivery
- Utilization of postnatal healthcare services
- Postnatal care practices

Dependent Variables

- Maternal health outcomes (postpartum morbidity, nutritional status, healthcare utilization)
- Neonatal health outcomes (exclusive breastfeeding, cord care, immunization, neonatal morbidity, healthcare-seeking behavior)

Operational Definitions

Age: Recorded as completed years as reported by the participant.

Education: Classified as illiterate, primary (Classes I–V), secondary (Classes VI–VII), high school (Classes VIII–X), college/intermediate, graduate, and postgraduate.

Socioeconomic Status: Assessed using the **Modified B.G. Prasad Socioeconomic Classification**, updated according to the **All India Wholesale Price Index (AIWPI)** for August 2011.

Study Tools

The following instruments were used:

- Pre-tested interview schedule
- Stethoscope
- Blood pressure apparatus
- Torch
- Infant weighing scale
- Standard diet chart for 24-hour dietary recall and nutritional assessment

Ethical Considerations

Ethical approval for the study was obtained from the **Institutional Ethics Committee** prior to commencement. Written informed consent was obtained from all participants after explaining the objectives and procedures of the study in their local language. Confidentiality and anonymity of participants were maintained throughout the study, and participation was entirely voluntary.

Statistical Analysis

Data were entered and compiled using **Microsoft Excel** and analyzed using **Epi Info** software. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. Associations between categorical variables were assessed using the **Chi-square test**, and a **p-value <0.05** was considered statistically significant.

RESULTS

Table 1: Socio-demographic characteristics of the study participants (N = 270)

Variable	Category	n	%
Age (years)	18–20	47	17.4
	21–25	163	60.4
	26–30	49	18.1
	>30	11	4.1
Education	Illiterate	87	32.2
	Literate	183	67.8
Occupation	Homemaker	206	76.3
	Unskilled worker	19	7.0
	Semiskilled worker	35	13.0
	Others	10	3.7
Socioeconomic status	Class I & II	5	1.9
	Class III	58	21.5
	Class IV	156	57.8
	Class V	51	18.9
Religion	Hindu	144	53.0
	Muslim	104	39.0
Parity	Christian	22	8.0
	One	100	37.0
	Two	111	41.1
	≥3	59	21.9

The majority of mothers were aged 21–25 years (60.4%), literate (67.8%), homemakers (76.3%), belonged to socioeconomic Class IV (57.8%), and had two children (41.1%).

Table 2: Utilization of antenatal care services among study participants (N = 270)

Variable	Category	n	%
Antenatal visits	<3	5	1.9
	3	13	4.8
	>3	252	93.3
TT immunization	Complete	259	95.9
	Incomplete	11	4.1
IFA tablets consumed	<100	33	12.2
	≥100	237	87.8

More than 90% of mothers had attended more than three antenatal visits, received complete tetanus toxoid immunization, and consumed at least 100 iron-folic acid tablets during pregnancy.

Table 3: Intranatal characteristics of study participants (N = 270)

Variable	Category	n	%
Place of delivery	Government hospital	115	42.6
	Private hospital	137	50.7
	Home	18	6.7
Type of delivery	Normal vaginal delivery	187	69.2
	Caesarean section	83	30.8
Delivery assisted by	Doctor	252	93.3
	Nurse	3	1.1
	Trained dai	3	1.1
	Untrained dai/Others	12	4.4

Note: Institutional deliveries accounted for 93.3% of all births, and doctors conducted the majority of deliveries (93.3%). Normal vaginal delivery was observed in 69.2% of mothers.

Table 4: Postnatal care utilization among mothers

Variable	Category	n	%
Home visit by health worker	Yes	129	47.8
	No	141	52.2
Postpartum sterilization*	Yes	85	50.0
	No	85	50.0

*Among mothers with two or more children (n = 170).

More than half of the mothers did not receive a postnatal home visit, while half of the eligible mothers underwent postpartum sterilization.

Table 5: Maternal postpartum and neonatal morbidity

Maternal Morbidity	n	%
Anaemia	95	35.2
Breast engorgement	9	3.3
Back pain	9	3.3
General weakness	6	2.2
Burning micturition	5	1.9
Excessive bleeding	4	1.5
Breast abscess	3	1.1
Constipation/Headache	3	1.1
Painful episiotomy	2	0.7
Neonatal morbidity	n	%
Acute respiratory infection	32	11.9
Low birth weight	27	10.0
Diarrhoea	18	6.7
Sucking problem	11	4.1
Vomiting	8	3.0
Skin lesions	8	3.0
Jaundice	7	2.6
Umbilical sepsis	3	1.1
Constipation	3	1.1
Abdominal distension	2	0.7
Neonatal sepsis	2	0.7
Congenital anomaly	1	0.4
No morbidity	150	55.6

Anaemia was the most common postpartum morbidity, affecting more than one-third of mothers. Acute respiratory infection was the most common neonatal morbidity, followed by low birth weight and diarrhoea.

Table 6: Neonatal characteristics and health outcomes (N = 270)

Variable	Category	n	%
Sex	Male	136	50.4
	Female	134	49.6
Birth weight	≥2500 g	243	90.0
	<2500 g	27	10.0
Overall health	Healthy	150	55.6
	One or more morbidity	120	44.4

One in ten newborns had low birth weight, while 44.4% experienced at least one morbidity during the neonatal period.

Table 7: Awareness regarding immunization and birth registration (N = 270)

Variable	Category	n	%
Immunization awareness	Complete	8	3.0
	Partial	158	58.5
	Unaware	104	38.5
Birth registration awareness	Aware	87	32.2
	Not aware	183	67.8

Awareness regarding childhood immunization and birth registration was suboptimal, with only 3% of mothers having complete knowledge about immunization.

Table 8: Association between place of delivery and type of delivery

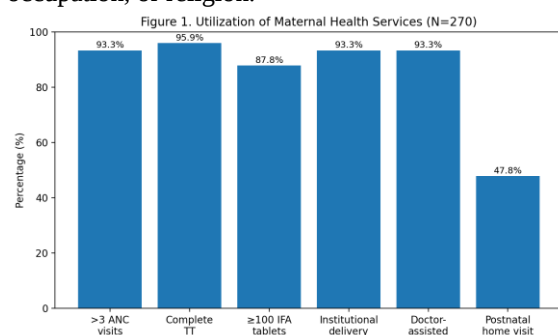
Place of delivery	Normal delivery n (%)	Caesarean section n (%)	χ^2	P value
Government hospital	99 (57.9)	16 (19.3)	33.63	<0.001
Private hospital	72 (42.1)	67 (80.7)		

Note: Caesarean section was significantly more common among mothers delivering in private hospitals compared with government hospitals (P<0.001).

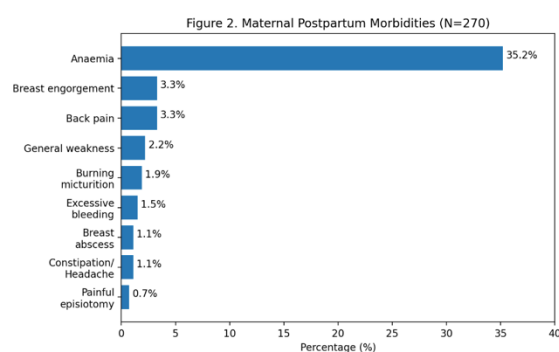
Table 9: Association between selected maternal and neonatal outcomes and socio-demographic characteristics (N = 270)

Outcome Variable	Associated Variable	χ^2 value	P value	Statistical significance
IFA tablet consumption (<100 vs. $\geq$ 100 tablets)	Education	0.063	>0.05	Not significant
	Occupation	0.129	>0.05	Not significant
	Socioeconomic status	3.569	0.059	Not significant
Breast problems	Occupation	8.327	<0.05	Significant
	Socioeconomic status	0.044	>0.05	Not significant
	Parity	13.714	<0.05	Significant
Neonatal acute respiratory infection (ARI)	Occupation	0.392	>0.05	Not significant
	Socioeconomic status	1.744	>0.05	Not significant
	Parity	0.003	>0.05	Not significant
Low birth weight	Occupation	0.082	>0.05	Not significant
	Socioeconomic status	36.536	<0.01	Significant
	Parity	4.412	<0.05	Significant
Birth registration awareness	Education	1.967	>0.05	Not significant
	Religion	1.442	>0.05	Not significant

Maternal breast problems showed significant associations with maternal occupation ($\chi^2 = 8.327$, $P < 0.05$) and parity ($\chi^2 = 13.714$, $P < 0.05$). Low birth weight was significantly associated with socioeconomic status ($\chi^2 = 36.536$, $P < 0.01$) and parity ($\chi^2 = 4.412$, $P < 0.05$). No statistically significant associations were observed between IFA tablet consumption and maternal education, occupation, or socioeconomic status; neonatal acute respiratory infection and maternal occupation, socioeconomic status, or parity; or birth registration awareness and maternal education or religion. Institutional delivery was not significantly associated with either socioeconomic status or religion ($P > 0.05$). Postpartum sterilization was not significantly associated with maternal education, occupation, or religion.



Antenatal care utilization was excellent (>90% for ANC visits, TT immunization, and institutional delivery). Postnatal home visits remained comparatively low (47.8%), indicating a gap in postnatal care.



Anaemia was the predominant maternal morbidity (35.2%). Acute respiratory infection (11.9%) and low birth weight (10.0%) were the leading neonatal health problems.

DISCUSSION

The present community-based longitudinal study assessed postnatal care practices and their impact on maternal and neonatal health outcomes among mothers residing in the urban slums of Kurnool.

The majority of mothers (60.4%) in the present study belonged to the 21–25-year age group. Similar findings were reported by Mishra et al,^[5] who observed that most mothers utilizing maternal health services in urban slums of India were between 20 and 29 years of age. Likewise, Khatun et al,^[6] reported that women in the early reproductive age group constituted the majority of postnatal mothers in urban communities. The similarity probably reflects the peak reproductive age among Indian women.

In the present study, 67.8% of mothers were literate. Comparable findings were reported by Sharma et al,^[7] who found that maternal literacy was positively associated with better utilization of antenatal and postnatal healthcare services. Similarly, Tiwari et al,^[8] demonstrated that maternal education significantly improved awareness regarding newborn care, breastfeeding, and immunization practices.

Antenatal care utilization was satisfactory in the present study, with 93.3% of mothers attending more than three antenatal visits. Similar observations were made by Bhatia et al,^[9] who reported that over 90% of pregnant women had received at least four antenatal visits following strengthening of maternal health programmes in India. Likewise, Singh et al,^[10] observed significantly improved antenatal care utilization among urban women following implementation of government maternal health initiatives.

The present study observed 95.9% complete tetanus toxoid immunization and 87.8% consumption of at least 100 iron-folic acid tablets. These findings are comparable with those of Patel et al,^[11] who reported high antenatal immunization coverage and improved iron-folic acid supplementation among pregnant

women attending urban health centres. However, Tolkien Z et al,^[12] observed that compliance with iron supplementation remained inadequate among women from lower socioeconomic groups because of poor counselling and gastrointestinal side effects.

Institutional delivery was reported by 93.3% of mothers in the present study, indicating a high level of utilization of skilled birth services. Similar findings were reported by Lee H-Y et al,^[13] who observed that 91.6% of women in urban India delivered in healthcare institutions following the expansion of maternal health programmes. Likewise, Mohanty and colleagues,^[14] reported that institutional delivery rates exceeded 90% in several Indian states after the implementation of the Janani Suraksha Yojana and Janani Shishu Suraksha Karyakram.

The present study also demonstrated that 69.2% of mothers had normal vaginal delivery, whereas 30.8% underwent caesarean section. Caesarean section was significantly more common in private hospitals than government hospitals ($P<0.001$). This finding is consistent with the observations of Boerma et al,^[15] who reported substantially higher caesarean section rates in private healthcare facilities worldwide. Similarly, Neuman et al,^[16] found that private hospitals in low- and middle-income countries had significantly higher caesarean delivery rates compared with public hospitals, often exceeding the recommended levels.

Although institutional delivery was high, only 47.8% of mothers received postnatal home visits from healthcare workers. Similar gaps were reported by Sacks et al,^[17] who highlighted that postnatal care remains the weakest component of the maternal healthcare continuum despite improvements in antenatal and intrapartum services. Likewise, Titaley et al,^[18] emphasized that inadequate postnatal follow-up is associated with delayed recognition of maternal and neonatal complications and increased risk of preventable morbidity.

Anaemia was the most common maternal morbidity in the present study, affecting 35.2% of mothers. Comparable findings were reported by Bencaiova et al,^[19] who observed that postpartum anaemia continues to affect nearly one-third of women globally despite widespread antenatal iron supplementation. Similarly, Milman,^[20] concluded that postpartum iron deficiency remains an important contributor to maternal fatigue, impaired breastfeeding, and delayed recovery after childbirth. Breast-related problems were reported in 4.4% of mothers and showed significant associations with maternal occupation and parity. Similar observations were made by Kent et al. (2020), who reported that breast engorgement and breastfeeding difficulties occur more frequently among primiparous women because of inadequate breastfeeding techniques and delayed initiation of feeding. Likewise, Victora et al,^[15] emphasized that early breastfeeding counselling substantially reduces breastfeeding-related complications during the postpartum period.

Among newborns, 10% had low birth weight. This prevalence is lower than that reported by Blencowe et al,^[21] who estimated that approximately 15–20% of births in low- and middle-income countries are low birth weight. The significant association observed between low birth weight and socioeconomic status in the present study agrees with the findings of Kader and Perera,^[22] who demonstrated that poverty, poor maternal nutrition, and inadequate pregnancy weight gain remain important determinants of fetal growth restriction. Similarly, Tessema et al,^[23] reported that multiparity and adverse socioeconomic conditions significantly influence birth weight outcomes.

Acute respiratory infection (11.9%) was the most common neonatal morbidity identified in the present study, followed by diarrhoea (6.7%) and jaundice (2.6%). Similar findings were reported by Sankar et al,^[24] concluded that infections continue to contribute substantially to neonatal morbidity despite improvements in institutional delivery and immunization coverage.

Overall, the findings of the present study indicate substantial improvements in antenatal care utilization, institutional delivery, and neonatal immunization among mothers residing in urban slums. However, deficiencies remain in postnatal home visits, maternal awareness regarding newborn care, birth registration, and recognition of danger signs. Similar conclusions have been drawn by Sacks et al,^[17] who emphasized that strengthening community-based postnatal care and improving the quality of counselling during the postpartum period are essential for reducing preventable maternal and neonatal morbidity.

CONCLUSION

The present study showed that although utilization of antenatal care, institutional delivery, and neonatal immunization was high among mothers residing in urban slums, significant gaps remained in postnatal home visits, maternal awareness, and newborn care practices. Maternal anaemia was the most common postpartum morbidity, while acute respiratory infection and low birth weight were the leading neonatal health problems. Maternal occupation, parity, and socioeconomic status significantly influenced selected maternal and neonatal outcomes. Strengthening community-based postnatal care through regular home visits, health education, breastfeeding support, and early identification of maternal and neonatal complications is essential to improve health outcomes among urban slum populations.

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