"THE PREVALENCE OF TOBACCO HABITS IN RANCHI DISTRICT, JHARKHAND: A QUESTIONNAIRE-BASED SURVEY

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ABSTRACT

Background: Tobacco usage is one of the major causes contributing to development of oral precancerous and cancerous lesions.

AIMS and objectives: The aim of the study was to assess the prevalence of tobacco use among residents of Kanke and Tamar blocks. The objectives were to determine the types of tobacco products used and to analyze socio-demographic factors and awareness levels regarding health associated with tobacco consumption.

Material methods: a cross-sectional, community-based study conducted from January to March 2025. A structured questionnaire was administered to collect data on tobacco usage patterns, socio-demographic characteristics, and awareness levels.

RESULT: A total of 1000 people were surveyed in two of the blocks of Ranchi district with mean±SD= 38.62±3.6. Majority of the population was male 64.9%. The prevalence of tobacco habits was 41.7%. The use of Gutkha (smokeless tobacco) was more in Kanke than in Tamar block where Khaini was more prevalent.

Conclusion: The study reveals high prevalence of tobacco use in Ranchi district. Community-level involvement and school-based programs can be crucial in curbing early initiation and reducing the overall burden of tobacco-related diseases.

Keywords: tobacco, smokeless tobacco, precancerous, cancer

INTRODUCTION

India bags to one of the largest populations of tobacco users in the world.[1] According to the Global Adult Tobacco Survey (GATS) 2016–17, nearly 28.6% of adults in India currently use tobacco in some form, which equates to more than 260 million individuals.[2] Tobacco-related illnesses account

for over 1.35 million deaths annually in India, and a significant burden of disease and healthcare costs is associated with its use.[2]

Jharkhand, an eastern Indian state with a large tribal population and relatively low human development indicators, exhibits a high prevalence of tobacco consumption. The state's socio-cultural landscape, coupled with limited awareness about the health risks of tobacco, makes it a fertile ground for tobacco addiction, especially among the marginalized and rural communities. Kanke and Tamar blocks, located within Ranchi district, reflect this broader trend. [3]

The Global Adult Tobacco Survey (GATS) India 2016–17 reported that about 28.6% of adults aged 15 and above use tobacco in some form, translating to nearly 267 million individuals. The health implications are profound, with tobacco use linked to various non-communicable diseases, including cardiovascular diseases, cancers, and respiratory illnesses.[2,3]

Jharkhand, a state in eastern India, exhibits a significant burden of tobacco use, particularly in smokeless forms. Ranchi District, the state capital, presents a unique demographic profile, encompassing urban, semi-urban, and rural populations, as well as a substantial proportion of Scheduled Castes and Scheduled Tribes. Understanding the prevalence and determinants of tobacco use in this district is crucial for developing effective public health strategies.[4]

Rationale for the Study

Although national and state-level data on tobacco use exist, district and block-level insights remain scarce. This lack of granular data limits the effectiveness of localized health interventions and policy measures. The GATS survey 2016-17 shows that 55% of Indian smokers and 50% of smokeless tobacco users plan or think of quitting tobacco use. In Jharkhand, only 18.4% smokers and 18.7% of smokeless tobacco users have made a quit attempt, far below the national average.[1]Around 5500 cancer-related deaths are reported in Jharkhand every year. The state of Jharkhand faces particular challenges because multiple forms of tobacco are in widespread use and limited resources are available for tobacco control.   By conducting a questionnaire-based survey in Kanke and Tamar blocks, this study seeks to provide data-driven insights into tobacco habits at the micro-level and to support the design of customized tobacco control strategies. The aim of the study was to assess the prevalence of tobacco use among residents of Kanke and Tamar blocks.

OBJECTIVES
1. To determine the types of tobacco products used.
2. To analyze socio-demographic factors associated with tobacco consumption.
3. To evaluate the awareness levels regarding health consequences of tobacco use.

Methodology
Study Design
This was a cross-sectional, community-based study conducted from January to March 2025. A structured questionnaire was administered to collect data on tobacco usage patterns, socio-demographic characteristics, and awareness levels.

Study Area
*   Kanke Block: Semi-urban area with mixed population including students, workers, and rural residents.
*   Tamar Block: Predominantly rural with high tribal population and agrarian economy.

Sampling Method
A multistage stratified random sampling technique was used. Ranchi has 18 blocks of which there are two subdivisions. The block which was most densely populated of both the subdivisions were selected for the survey.
*   Stage 1: Selection of clusters (wards in Kanke and villages in Tamar).
*   Stage 2: Random selection of households within each cluster.

- Stage 3: One eligible individual (aged ≥15 years) from each household was selected randomly for participation.

Sample Size
A total of 1000 respondents were surveyed:
- Kanke Block: 500 respondents
- Tamar Block: 500 respondents

The sample size was calculated considering a tobacco use prevalence of 38.9% (based on GATS report 2016-17), with a 5% margin of error and 95% confidence interval.

Data Collection Tool
A pre-tested, semi-structured questionnaire google form sheet was used to gather information on:
- Demographics (age, gender, education, occupation)
- Type and frequency of tobacco use (smoking/smokeless)
- Age of initiation
- Motivations and social influences
- Awareness of health risks and form of tooth brushing willingness to quit. The study population was also screened for any dental anomalies and oral cancer screening was done.

Ethical Considerations
Informed consent was obtained from all participants. The study received approval from the Institutional Ethics Committee. Confidentiality and anonymity of the participants were ensured.

Results:

Table1. Description of Age in study population

Variable	N	Mean±SD	Minimum	Maximum	Median	Shaiprowilk W	p
Age	1000	38.62±3.6	15	90	53	0.97	0.053(NS)

SD= Standard Deviation

Fig 1. Gender Distribution

% of study population

45.10%
64.90%
- Male
- Female
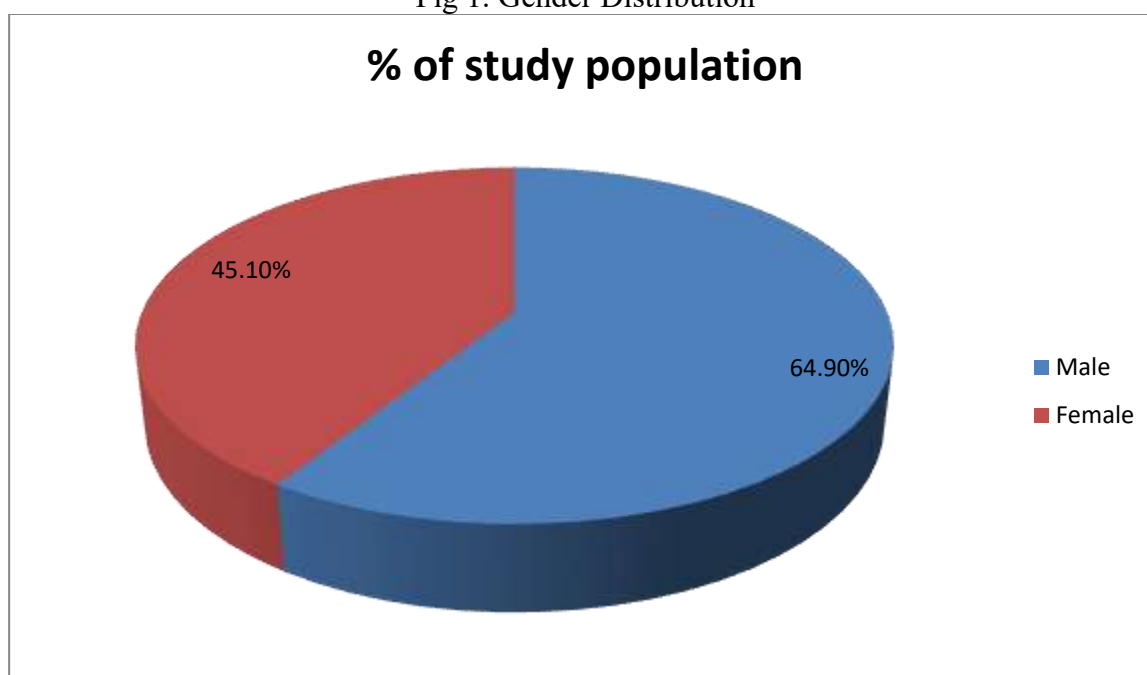
TABLE 2. DISTRIBUTION OF DEMOGRAPHIC VARIABLES

VARIABLE	n = 1000	n (%)	χ^2	p
Level of Education • NO FORMAL SCHOOLING • LESS THAN PRIMARY SCHOOL COMPLETED • PRIMARY SCHOOL COMPLETED • LESS THAN SECONDARY SCHOOL COMPLETED • SECONDARY SCHOOL COMPLETED • HIGHER SECONDARY SCHOOL COMPLETED • COLLEGE/UNIVERSITY COMPLETED • POST GRADUATE DEGREE COMPLETED	1000	46(4.6) 147(14.7) 240(24) 163(16.3) 224(22.4) 142(14.2) 21(2.1) 17(1.7)	3.12 3.12	0.67(NS) 0.67(NS)
Main work status • Government employee • Non-government employee • Daily wage/casual laborer • Self-employed • Student. • Homemaker • Retired		42(4.2) 334(33.4) 173(17.3) 350(35) 39(3.9) 30(3) 32(3.2)	3.71	0.37(NS)
Family income(Kuppuswamy scale 2022) • ≤ 9307 Rs • 9308-27882 • 27883-46474		134(13.4) 828(82.8) 38(3.8)	2.14	0.61(NS)
Marital Status Married Unmarried		931(93.1) 69(6.9)	3.22	0.14(N)
Number of working hours 3-6hrs 7-10hrs >10hrs		399(39.9) 498(49.8) 103(10.3)	16.21	0.023(S)
Number of dependents 0 2 3 4 5 6		62(6.2) 240(24) 141(14.1) 347(34.7) 195(19.5) 15(1.5)	22.14	0.12(NS)

Chi square test was used to analyse the categorical data.
Majority of the patients had primary education
No statistical significant difference was seen

TABLE 3. TOBACCO USAGE and HABITS

VARIABLE	n = 1000	n(%)	χ^2	p
SMOKELESS TOBACCO Form of Smokeless tobacco used Gutkha Khaini Pan Masala No tobacco habits	1000	82(8.2) 95(9.5) 14(4.4) 583(58.3)	6.31	0.015(S)
Use of betel nut Yes No		`145(14.5) 855(85.5)	11.7	0.011(S)
Frequency of smokeless tobacco consumed per day 2-5 5-10 >10		79(7.9) 98(9.8) 10(1)	16.3	0.003(S)
Duration of smokeless tobacco(yrs) 1-5 6-10 10-15 >15		60(6) 64(6.4) 45(4.5) 20(2)	31.6	0.021(S)
How often do you intentionally swallow tobacco juice • Never • Sometimes • NA		120(12) 69(6.9) 583(58.3)	21.8	0.17(NS)
TOBACCO USE Reasons for consuming tobacco • Stress reliever • Pleasure giving • Mood alleviation • Sleep relaxation • Bowel passing • Peer pressure NA		135(13.5) 31(3.1) 17(1.7) 5(0.5) 50(5)) 149(14.9) 583(58.3)	16.8	0.023(S)
Source of purchase of tobacco • Near work • Bulk purchase • NAYes		231(23.1) 186(18.6) 613(61.3)	18.9	0.066(NS)
Previous attempts of quitting • Yes • No		7(0.7) 380(38)	33.7	0.13(NS)
Reason for relapse • Social pressure • Any other • NA		3(0.3) 5(0.5) 613(61.3)	17.2	0.24(NS)
Alcohol • Yes Hadiya • Yes		153(15.3) 390 (39)	42.8	0.014(S)
Pattern of alcohol/Hadiya drinking				

• Daily • Occasionally • Social drinking(less than 3 weeks) • NA		97(9.7) 26(2.6) 80(8) 797(79.7)	51.8	0.022(S)
Do you find it difficult to refrain from tobacco in forbidden places? • Yes • No • NA		159(15.9) 258(25.8) 583(58.3)	33.2	0.015(S)
How soon after you wake up do you use first dip/chew? • Within 5 min • 6to 30 min • 31 to 60 min • More than 60 min • Refused		78(7.8) 92(9.2) 82(8.2) 67(6.7) 98(9.8)	22.6	0.031(S)
Which tobacco would you hate to give up most? • First one • All others		97(9.7) 320(32)	26.5	0.612(NS)
Do you use tobacco when you are so ill that you are in bed • Yes • No		105(10.5) 312(31.2)	19.5	0.24(NS)
Family history in first degree tobacco use • Yes • No		123(12.3) 48(4.8)	34.8	0.26(NS)
SMOKING TOBACCO Type of smoking tobacco • Bidi • Hukka • Chillum • Cigarette		128(12.8) 5(0.5) 0 12(1.2)	38.4	0.042(S)
Tobacco use in family members /relatives • Smoking • None		81(8.1) 419(41.9)	32.8	0.055(NS)

TABLE 4. OTHER RELEVANT QUESTIONS

VARIABLE	n = 1000	n(%)	χ^2	p
Medical illness Yes No	1000	75(7.5) 84(8.4)	16.8	0.67(NS)
Psychiatric illness Yes No		54(5.4) 945(94.5)	24.7	0.058(NS)
• Presently under any medical care (if yes specify) • High BP • Cough • Tiredness • Diabetes • No		39(3.9) 54(5.4) 65(6.5) 98 (9.8) 23(2.3)	44.2	0.0446(S)
Has tobacco usage done any harm to your				

body? • Definitely No • Definitely Yes • Probably No • Probably Yes		614(61.4) 38(3.8) 286(28.6) 62(6.2)	26.8	0.034(S)
Motivation stage Assessment • Precontemplation • Unwilling • Contemplation • Preparedness		110(11) 71(7.1) 130(13) 46(4.6)	33.2	0.017(S)

TABLE 5.ORAL EXAMINATION

VARIABLE	n = 1000	n(%)	χ^2	p
Dental anomalies • Dental caries • Periodontitis • Tooth and gingival staining	1000	479(47.9) 313(31.3) 208 (20.8)	13.6	0.016(S)
Material used for tooth brushing • Toothpaste • Toothpowder • Charcoal • Neem karanch • Gul/Gudaku		560(56) 83(8.3) 24(2.4) 262(26.2) 71(7.1)	21.3	0.018(S)
Clinical Examination of Oral Cavity and Diagnosis(WHO 2013) OPMD (Oral potentially malignant disorders) • Leukoplakia • Erythroplakia • Oral Submucous fibrosis • Veruccous Leukoplakia • Smoker's Palate(Nicotina Stomatitis) • Oral Lichen planus		137(13.7) 20(3) 2(0.2) 19(1.9) 8(0.8) 75(7.5) 13(1.3)	42.8	0.047(S)

Table1. Represents the study population is homogeneous as shaiprowilk test of normality is 0.97 which is ≥0.05. The mean age is 38.62±3.6.The majority of study population being males 649(64.9%) and females less 451(45.1%)(Fig1).

Table2.The other demographic profiles education, work profile and others were represented.There was statistically non significant difference in the demographic variables like level of education, main work status, family income, marital status and number of dependents. There was statistically significant difference in the number of working hours. Majority of the study population had completed (24%) primary school followed by(22.4%) secondary school completion.35% of the population surveyed were self employed. The family income was between Rs 9308-27882 in 82.8% study population. 93.1% were married. Majority of population 49.8% worked for 7-10 hours. 34.7% had 4 as number of dependents.

Table 3. 58.3% of the population had no tobacco habits while 41.7% had tobacco habits.9.5% used Khaini as a form of smokeless tobacco followed by Gutkha. The use of betel nut was found in 14.5%. Smokeless tobacco used is 5-10 per day in 9.8%. 6.4% used since 6-10 years. In this questionnaire survey we also asked about swallowing intentionally tobacco juice, 12% never swallowed whereas 6.9% swallowed sometimes. The reasons for tobacco usage was stated as stress

reliever, pleasure giving, mood alleviation, sleep relaxation, bowel passing and peer pressure. The majority of study population 14.9% consumed tobacco for peer pressure whereas 13.5% consumed tobacco as it was a stress reliever to them. Mostly they purchased tobacco from work place (23.1%). 38% had no previous attempts of quitting. Out of the total only 0.7 % attempted to quit, there was relapse in 5 people due to social pressure and 2 of them were unable to quit tobacco due to other reasons like stress and bowel disturbance.20.3% consumed alcohol/hadiya and daily consuming alcohol were more. 15.9% people found it difficult to refrain tobacco in public places. 2.9%. Some people (7.8%) took tobacco within 5 min of getting up. Majority of the people took tobacco in 6 to 30 min (9.2%). 9.7 % hate to give up most all the tobacco at various times after first one. 10.5% people find it difficult to refrain tobacco when they were ill. 12.3% people showed family history of tobacco in theirs families. In smoking tobacco, 12.8% had habit of smoking bidi whereas 1.2% had habit of cigarette smoking. 0.5% reported habit of hukka intake.

Table 4. 7.5% people reported of medical illness. About 5.4% reported with psychiatric illness.3.9% reported with high BP, 5.4% with cough, 6.5% reported with tiredness whereas 9.8% patients had Diabetes. When people were asked about the knowledge about tobacco harm to their body majority(61.4%) of them answered as definitely no whereas 28.6% were not sure with the harm tobacco has caused to their body. Only 3.8% answered that tobacco had caused harm to their body whereas 6.2% were not sure that tobacco had caused harm to their body.When we assessed the willingness to quit by the assessment stages we found that 11% people were in precontemplation means they were unmotivated to quit tobacco and believed that they did not need solution to a problem. 7.1% people were unwilling to quit tobacco. About 13 people were in contemplation stage means they were marked by awareness and acknowledgement of the problematic tobacco habit with serious consideration to change. Only 4.6% people were in preparedness stage means they wanted to acknowledge that their tobacco habit was problematic and they could make commitment to correct it.

Table 5.On their oral examination 27% had dental caries, 31.3% had periodontitis and majority had tooth staining 41.7%. When asked about the material used for tooth brushing 56% used toothpaste, 8.3% used toothpowder, 2.4% used charcoal, Many people 26.2% used Neem karanch for tooth brushing. The awareness about Gul Gudaku containing tobacco was unknown as 7.1% used these materials as dentifrices. When people were examined for Oral Potentially malignant disorders (OPMD) we found 13.7% people with OPMD of which 2% had Leukoplakia, 0.2% had erythroplakia, 1.9% reported OSMF, 0.8% had Veruccous leukoplakia. Smokers palate was seen in 7.5% people and 1.3% had oral lichen planus

Discussion

The study reveals a high prevalence of tobacco use in Ranchi District, with significant variations across demographic and socioeconomic groups. The predominance of smokeless tobacco use aligns with national trends, particularly in rural and tribal populations. Early initiation and low cessation rates highlight the need for targeted interventions. Tobacco use was inversely related to educational attainment and income levels. Individuals with no formal education exhibited the highest prevalence (65%), while those with higher education had the lowest (20%). Similarly, tobacco use was more common among daily wage laborers and agricultural workers. So far no recent study has been performed on community level in Jharkhand and in India .Our study provides an alarming data of increase in tobacco habits since the GATS survey 2016-17.[5,6]

Comparison with National Data

The findings are consistent with national data from GATS India 2016–17, which reported higher tobacco use among males, individuals with lower education levels, and rural residents. The study by Sinha et al. (2003)[7] also corroborates the association between tobacco use and socioeconomic factors.

Cultural and Social Influences

Cultural acceptance of tobacco use, peer influence, and stress due to poverty and unemployment contribute to the persistence of tobacco habits. The study by Singh et al. (2020)[8] emphasizes the role of social factors in tobacco use among Indian populations.

Dominance of Smokeless Tobacco

Smokeless tobacco remains the dominant for especially among females and older adults. The low cost, social acceptability, and ease of use contribute to its widespread use. This finding is consistent with studies conducted in other parts of Jharkhand and neighboring states.[3,4]

Early Age of Initiation

The early initiation of tobacco use, particularly from 15 years of age, is concerning. It reflects the accessibility of tobacco products to minors and insufficient enforcement of legal restrictions. Peer pressure and family influence were found to be key factors. [9]

Working hours

In higher proportion of study population the working time was between 7-10 hours and they belonged to low socioeconomic workers on daily wages. This paves the way towards greater access to available tobacco products from workplace which could have increased the risk of tobacco and substance use.[10] This factor could have contributed additively to already reported risk factors in lower socio-economic families like larger family size, less effective supervision and lower parental education.[9,10]

Socioeconomic and Educational Factors

Higher prevalence among the less educated and economically disadvantaged groups highlights the inverse relationship between socioeconomic status and tobacco use. Awareness was significantly lower among illiterate and semi-literate respondents. This finding was consistent with other studies.[9]

Gender Disparities

While male tobacco use remains high, the prevalence among women though lower was not negligible, especially smokeless tobacco. Social norms may underreport female usage, and smokeless tobacco offers a socially discreet method of consumption for women.[10]

Oral hygiene practices

The present study found that brushing with toothbrush and toothpaste was the most commonly used method of teeth cleaning (56%). Similar findings were also noted by Jain *et al* [11]at Jodhpur, Sharda *et al* [12]at Udaipur, Chandra Shekhar *et al*[13] at Mysore. In our study 7.1% used Gul, Gudaku to clean their teeth. This was much higher than the national data of 3.8% and 1.6% of Delhi population using orally applied tobacco (including *Gul*, Gudakhu, and Mishri).[14] Sarkar *et al*. showed contrasting results with only 0.1% of respondents using *Gul* [15]This increase in the usage of *Gul* could possibly be attributed to the regional variations. The awareness that Gul contains tobacco and is harmful should be educated to the people. The reason for more use of Gul as a dentifrice among females can be justified as they probably find it economically useful to provide relief from multiple problems as toothpain, bad breath and tooth cleaning and its readily availability.

Dental anomalies

The prevalence of tooth and gingival staining was 20.7% because of use of tobacco by the study population. Other most common dental anomalies were dental caries and periodontitis. Dental caries and periodontitis are the most common dental problems ,this is consistent with other studies.[9,10]

OPMD

The prevalence of oral lesions was 13.7%, with the prevalence being greater for males than females. The prevalence of leukoplakia (2%), OSMF (1.9%), and oral lichen planus (1.3%) This is slightly raised than previous studies conducted in India.[16,17]

ALCOHOL

The prevalence of alcohol consumption (15.3%) in the study population was higher when compared to the results reported by Neufeld *et al*[18] using the Indian National Sample survey sample. The use of hadiya was 39%.Hadiya is a traditional rice based fermented alcoholic beverage deeply rooted in tribal culture of Jharkhand. It is considered as a herbal tonic rather than a harmful liqor. It is thought to have medicinal values and energizer .It is believed to cure jaundice, abdominal pain , dysentery and heat stroke. It requires minimal investment and women can brew and sell and earn income. Selling hadiya is a source of income and livelihood for many people in Jharkhand.

The prevalence of SLT (18.9%) and smoking (14.5%) was found to be lower. Smoking and SLT were the significant predictors of OPMD in our study population. However, the association between the presence of OPMD and alcohol consumption was not statistically significant.

Willingness to quit 0.7% of the study population made attempt to quit .A total of 17.6% people were willing to quit tobacco which is far lesser than the national average of 35.5%.[19]This is probably because of multiple forms of tobacco habits. There is more prevalence of smokeless tobacco. The socioeconomic and cultural factors reduce motivation and awareness. Tobacco cessation services in community and advises by health workers are sparse.

Awareness and Cessation

Awareness of health risks was moderately Cessation attempts were few, with low success rates due to lack of access to support services, counseling, and rehabilitation programs.Similar findings seen in other studies.[20,21]

Recommendations

1. Targeted Awareness Campaigns
o Focus on rural and tribal communities.
o Use local languages and culturally appropriate messaging.
2. School-Based Education Programs
o Integrate anti-tobacco modules into the school curriculum.
o Engage teachers and peer leaders to educate students.
o Incorporating knowledge about harms of tobacco and use of Gul, Gudaku as dentifrice
3. Tobacco Cessation Services
o Establish helplines and community-based cessation centers.
o Train local healthcare providers in brief interventions.
4. Policy Enforcement
o Ban sale of tobacco near schools.
o Strict monitoring of sales to minors.
5. Community Engagement
o Involve local panchayats, tribal leaders, and religious heads.
o Promote tobacco-free village initiatives.

Limitations

• Self-reported data may be subject to reporting bias.
• The study does not assess the biochemical verification of tobacco use.

Conclusion

Tobacco use remains a pervasive public health challenge in Ranchi District, Jharkhand. The high prevalence, early initiation, and low cessation rates necessitate urgent and targeted interventions.

Collaborative efforts involving government agencies, healthcare providers, and community organizations are essential to curb the tobacco epidemic and improve public health outcomes.

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