



Students' Attitude and Participation in Cleanliness Activities

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ABSTRACT

Background: Cleanliness and sanitation are vital for public health, environmental sustainability and social well-being. In India, initiatives such as the Swachh Bharat Mission have improved sanitation infrastructure; however, sustained behavioral change remains a challenge. Educational institutions play a crucial role in shaping students' attitudes and practices regarding cleanliness, yet evidence linking attitudes to actual participation, particularly at agricultural universities, is limited.

Methods: The study was conducted at Sardarkrushinagar Dantiwada Agricultural University (SDAU), Gujarat, using a descriptive research design during 2021-22 to 2023-24. A total of 310 undergraduate and postgraduate students were selected through proportionate random sampling. Data were collected using a standardized Attitude Scale Towards Cleanliness and a structured participation questionnaire. Descriptive statistics and Pearson's correlation analysis were performed using SPSS.

Result: Most students exhibited a moderately favorable attitude toward cleanliness and a medium level of participation. Strong agreement was observed on health, hygiene and social responsibility, while limited clarity existed regarding technical sanitation aspects. Participation was higher in organized campus activities, whereas sustained behavioral practices showed lower involvement. Socio-personal variables such as age, family type and faculty affiliation showed weak to moderate associations with attitude and participation. The findings reveal an attitude-participation gap, indicating that awareness alone does not ensure sustained cleanliness practices. Strengthening experiential learning, institutional support and student-led initiatives can enhance long-term engagement and support national sanitation goals and relevant sustainable development goals.

Key words: Attitude, Cleanliness, Participation, Sanitation, Students, Sustainable development goals, Swachh Bharat mission.

INTRODUCTION

Cleanliness and sanitation are fundamental to public health, environmental sustainability and human dignity. Poor sanitation and hygiene practices contribute significantly to the spread of communicable diseases and adversely affect the quality of life, particularly in developing countries. Globally, sanitation has been recognized as a key determinant of health and sustainable development (WHO, 2018; UNDP, 2020). Despite improvements in infrastructure, behavioral and attitudinal dimensions continue to play a decisive role in determining the effectiveness of sanitation initiatives.

In India, cleanliness and sanitation are deeply embedded within historical, cultural and social contexts. Scholars have highlighted that traditional social hierarchies and caste-based associations with sanitation work have historically shaped public attitudes toward cleanliness (Ramaswamy, 2015; Chakrabarti, 2016). These deeply rooted perceptions have often resulted in social disengagement from cleanliness-related responsibilities. Recognizing these challenges, the Government of India launched the Swachh Bharat Abhiyan in 2014, with the dual objectives of improving sanitation infrastructure and fostering a behavioral shift toward cleanliness through mass participation and awareness (Ministry of Housing and Urban Affairs, 2020).

Several studies conducted after the launch of the Swachh Bharat Mission have reported increased awareness and generally positive attitudes toward cleanliness among different population groups, including students and youth

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(Varshney *et al.*, 2025; Mohanty and Yadav, 2018; Sharma and Gupta, 2019; Srivastava *et al.*, 2020). However, evidence also suggests that favorable attitudes do not always translate into sustained participation or long-term behavioral change. Studies among school and college students have consistently shown that while awareness levels are relatively high, actual involvement in cleanliness practices remains moderate (Kumar and Raj, 2017; Patil and Malpathak, 2018; Nanda and Sharma, 2021).

Educational institutions play a critical role in shaping social values and responsible citizenship. Students

represent an essential group for cleanliness initiatives, as habits formed during this stage are likely to influence future professional and community behavior. Research has emphasized that student participation in cleanliness activities strengthens civic responsibility and promotes collective action, yet such participation is often event-based rather than habitual (Pandey *et al.*, 2019; Raj and Bhattacharya, 2021). Moreover, studies have reported gaps in technical understanding of sanitation systems, waste management and hygiene practices, even among educated populations, indicating the need for structured and experiential learning approaches (UNICEF, 2021).

Assessing students' attitudes toward cleanliness requires reliable, standardized measurement tools. The development and standardization of attitude scales, such as the Attitude Scale Towards Cleanliness developed by Khandelwal *et al.* (2017), have enabled systematic evaluation of perceptions and beliefs related to cleanliness. Such tools have been widely used in academic studies to examine attitudinal patterns and their relationship with participation in cleanliness-related activities.

Despite the growing body of literature on cleanliness and sanitation, few studies have jointly examined students' attitudes and levels of participation in agricultural university settings, particularly in the Indian context. Agricultural universities primarily cater to students from rural and agrarian backgrounds, making them essential spaces for promoting cleanliness practices that can extend beyond campuses into surrounding communities. Understanding how socio-personal characteristics influence attitudes and participation can provide valuable insights for designing targeted, sustainable interventions.

The present study is also closely aligned with the Sustainable Development Goals, particularly SDG 6 (Clean Water and Sanitation) and SDG 3 (Good Health and Well-being), which emphasize hygiene, sanitation and preventive health measures, as well as SDG 4 (Quality Education), which highlights the role of education in promoting sustainable behaviors. By examining students' attitudes and participation in cleanliness activities, the study contributes to understanding how educational institutions can support behavioral change essential for achieving these global development goals.

Despite extensive research on cleanliness awareness and sanitation initiatives in India, few empirical studies have jointly examined students' attitudes and actual participation in agricultural university settings. In particular, there is a lack of integrated evidence on how favorable attitudes translate into participation when influenced by socio-personal and academic factors among undergraduate and postgraduate students, mainly drawn from rural and agrarian backgrounds.

Against this backdrop, the present study was undertaken at Sardarkrushinagar, Dantiwada Agricultural University (SDAU), Gujarat, to assess the attitudes and levels of participation of undergraduate and postgraduate

students in cleanliness activities. The specific objectives of the study were to examine the socio-personal characteristics of the respondents, assess their attitudes toward cleanliness, analyze the extent of their participation in cleanliness-related activities and determine the relationships between selected socio-personal variables and students' attitudes and participation in cleanliness-related activities.

MATERIALS AND METHODS

The present study was conducted at SDAU, Gujarat, using a descriptive research design, a commonly used approach in studies assessing students' attitudes and participation related to cleanliness and sanitation. The use of a descriptive survey method is well supported by earlier research in agricultural education contexts. For instance, Reddy *et al.* (2025) employed a similar descriptive research survey to assess attitudes among final-year female agricultural students selected from various agricultural colleges in Andhra Pradesh. The population comprised undergraduate and postgraduate students enrolled in different colleges of the university. A proportionate random sampling technique was employed to ensure representation from all faculties, following approaches adopted in earlier sanitation and hygiene studies in educational settings (Kumar and Raj, 2017; Pandey *et al.*, 2019; Yadav *et al.*, 2025). Accordingly, 25 per cent of undergraduate and 25 per cent of postgraduate students were selected from each college, resulting in a total sample of 310 respondents, including 229 undergraduate (UG) and 81 postgraduate (PG) students.

Information on socio-personal characteristics such as age, gender, caste, type of family, faculty, family annual income, family occupation, place of residence (rural or urban) and future plans was collected using a Google Form to collate and analyze. These variables were selected based on their documented influence on cleanliness attitudes and participation in earlier studies (Mohanty and Yadav, 2018; Sharma and Gupta, 2019).

Students' attitude toward cleanliness was measured using the Attitude Scale Towards Cleanliness developed and standardized by Khandelwal *et al.* (2017). The scale consists of 20 statements covering cognitive, affective and behavioral dimensions of cleanliness, with an equal mix of positively and negatively worded items. Responses were recorded on a three-point Likert-type continuum of Agree, Undecided and Disagree. For positively worded statements, scores of 3, 2 and 1 were assigned, respectively, while reverse scoring was applied for negatively worded statements, following standard attitude measurement procedures (Khandelwal *et al.*, 2017; Sharma and Gupta, 2019). The total attitude score for each respondent was obtained by summing the item scores, with higher scores indicating a more favorable attitude toward cleanliness. Based on the calculated mean and standard deviation of attitude scores, respondents were

classified into least favorable, moderately favorable and most favorable attitude categories. The attitude scale demonstrated acceptable internal consistency during standardization, with a reliability coefficient of 0.60, confirming its suitability for empirical studies on cleanliness and sanitation (Khandelwal *et al.*, 2017). Comparable levels of reliability have been reported in similar social science research using Likert-type attitude scales. For instance, Datta *et al.* (2018), in their study on rural women's attitudes toward self-help groups, assessed scale reliability using Cronbach's alpha and reported a satisfactory reliability coefficient of 0.652 for a 13-item scale. The consistency of reliability coefficients across these studies indicates that the scale used in the present investigation is methodologically sound and appropriate for measuring attitudes in applied social and behavioral research contexts.

The extent of participation in cleanliness activities was assessed using a structured participation questionnaire developed for the study. Similar frequency-based participation scales have been widely used in studies examining youth involvement in cleanliness and sanitation initiatives (Patil and Malpathak, 2018; Pandey *et al.*, 2019). The questionnaire included statements related to students' participation in various cleanliness-related activities on campus and in surrounding areas. Responses were recorded on a three-point continuum of Always, Sometimes and Never and were scored as 3, 2 and 1, respectively. The total participation score was calculated by summing responses across all items. Respondents were then categorized into low, medium and high levels of participation using the mean and standard deviation as cut-off points, consistent with procedures adopted in earlier behavioral studies (Nanda and Sharma, 2021).

The survey method was used to collect the data. Before administering the instruments, respondents were informed about the study's purpose, assured of confidentiality and provided informed consent. Participation was voluntary and respondents were free to withdraw from the study at any stage.

The collected data were coded, tabulated and analyzed using the Statistical Package for the Social Sciences (SPSS) software. Descriptive statistics, including frequencies, percentages, means and standard deviations, were used to summarize socio-personal characteristics, attitude levels and participation patterns. Inferential statistical analysis was conducted using Pearson's correlation coefficient to examine the relationships between selected socio-personal variables and students' attitudes and participation toward cleanliness, as recommended in similar studies (Pandey *et al.*, 2019; Nanda and Sharma, 2021). Statistical significance was tested at the 0.05 and 0.01 probability levels.

RESULTS AND DISCUSSION

Socio-personal characteristics of the respondents

The socio-personal profile of the respondents (Table 1) indicates that the study largely represents young university

students, predominantly in their early twenties, with nearly equal representation of male and female students. Such demographic balance provides a suitable base for examining cleanliness-related attitudes and participation without strong gender bias. The social composition, with a substantial proportion of students from SEBC and General categories, reflects the university's regional context and aligns with earlier observations that perceptions of cleanliness in India are closely shaped by social background and cultural norms (Ramaswamy, 2015; Chakrabarti, 2016).

A higher proportion of respondents belonged to nuclear families and rural areas and most came from agrarian or allied occupational backgrounds. These characteristics are essential while interpreting cleanliness behavior, as rural exposure and family structure influence everyday sanitation practices and collective responsibility (Kumar and Raj, 2017). The dominance of agriculture and allied faculties suggests that students are exposed to environmental and field-based learning, which may positively influence awareness of cleanliness and sustainability. Overall, the socio-personal profile provides a relevant contextual framework for interpreting subsequent results on attitude and participation.

Overall attitude of students towards cleanliness

The distribution of respondents across attitude categories (Table 2) shows that a majority of students exhibited a moderately favorable attitude toward cleanliness, with a smaller but notable proportion demonstrating a highly favorable attitude. The overall mean attitude score (Table 2), falling within the moderate range, suggests that students generally recognize the importance of cleanliness but may not have fully internalized it as a strong, substantial personal or civic value.

Postgraduate students showed more favorable attitudes than undergraduates, suggesting the possible influence of academic maturity and prolonged exposure to institutional norms. Similar patterns have been reported among college and university students, where education and exposure to public campaigns were found to enhance cleanliness attitudes, though not always to the highest level (Mohanty and Yadav, 2018; Sharma and Gupta, 2019; Srivastava *et al.*, 2020). The limited proportion of students with the least favorable attitudes suggests that overt resistance to cleanliness is minimal, reflecting the broader impact of national initiatives such as the Swachh Bharat Mission (Ministry of Housing and Urban Affairs, 2020).

Distribution of the respondents according to their attitude towards cleanliness

To obtain the profile of the students depicting their attitude toward cleanliness, they were grouped into three categories, i.e., least favorable, moderately favorable and most favorable, based on the calculated mean and standard deviation of the attitude scores obtained by the respondents.

As shown in Table 2, 213 students (68.70%) exhibited a moderately favorable attitude toward cleanliness. It was followed by 73 students (23.54%) who demonstrated the most favorable attitude, while a smaller segment of 24 students (7.74%) fell into the least favorable attitude category.

A further deep glance at the data presented in Table 2 reveals that 8.29 per cent of UG and 6.17 per cent of PG students had the least favourable attitude toward cleanliness, while the majority of respondents, *i.e.*, 71.17

per cent of UG and 61.72 per cent of PG, were in the moderately favourable category. Notably, 47% of UG and 26% of PG students exhibited the most favourable attitude toward cleanliness. These results indicate a positive orientation among students, especially undergraduates, towards cleanliness, although attitudes need strengthening, particularly among postgraduates. The present findings are in line with studies by Kumar and Raj (2017); Sharma and Gupta (2019); Nanda and Sharma, (2021)

Table 1: Socio-personal characteristics of the respondents (n = 310).

Variable	Category	Frequency (n)	Percentage (%)
Age (Years)	18-20	19	6.12
	21-22	188	60.64
	>22	103	33.22
Gender	Male	150	48.38
	Female	160	51.62
Caste	SC	46	14.83
	ST	36	11.61
	SEBC	143	46.12
Family type	General	85	27.41
	Joint	130	41.94
	Nuclear	180	58.06
Faculty	CPCA	187	60.32
	Food technology	26	8.38
	Community science	17	5.48
	Basic sciences	56	18.06
	Renewable energy	18	5.80
	ABM	6	1.93
Family annual income (₹)	Low ($\leq 2,63,000$)	268	86.45
	Medium (2,63,001-5,26,000)	22	7.09
	High ($> 5,26,000$)	20	6.45
Family occupation	Agriculture and dairy	184	59.35
	Business	57	18.38
	Private service	33	10.64
	Government service	36	11.61
Residence	Rural	226	72.90
	Urban	84	27.10
Future plan	Government job	122	39.35
	Private job	84	27.09
	Business	53	17.09
	Higher education	48	15.48
	No plan	3	0.96

Table 2: Distribution of respondents according to attitude towards cleanliness (n = 310).

Attitude category	UG (n=229)	PG (n=81)	Total (n=310)
Least favourable	19 (8.29)	5 (6.17)	24 (7.74)
Moderately favourable	163 (71.17)	50 (61.72)	213 (68.70)
Most favourable	47 (20.52)	26 (32.09)	73 (23.54)
Total	229 (100)	81 (100)	310 (100)

Mean attitude score = 27.47; SD = 6.26.

Cut-off values based on Mean \pm SD.

and Mohanty and Yadav (2018), all of which reported that a majority of students displayed moderate to favourable attitudes toward cleanliness.

Statement-wise attitude towards cleanliness

The statement-wise analysis (Table 3) provides deeper insight into specific dimensions of students' attitudes. Strong agreement with statements related to health benefits, the unpleasantness of dirty surroundings, the importance of waste management and the prioritization of public health indicates that students possess a sound understanding of cleanliness as a health and social concern. This finding is consistent with earlier studies reporting high awareness of hygiene and sanitation among students and youth (WHO, 2018; Kumar and Raj, 2017).

Apparent disagreement with statements reflecting social stigma-such as the perception that cleaning degrades social image or that sanitation work is socially unacceptable-suggests a positive shift away from historically rooted misconceptions. Scholars have emphasized that sanitation in India has long been associated with caste-based roles and social exclusion (Chakrabarti, 2016) and the rejection of such views among students indicates a gradual cultural transition, particularly among educated youth (Patil and Malpathak, 2018; Raj and Bhattacharya, 2021).

However, neutrality observed in statements related to technical and regulatory aspects-such as wastewater reuse, sanitation methods and legal enforcement of cleanliness-highlights gaps in applied knowledge rather than a lack of concern (Shilunga *et al.*, 2018). Similar uncertainty has been reported in WASH-related studies, where respondents showed favorable attitudes but limited technical understanding of sanitation systems (Bauza *et al.*, 2021; UNICEF, 2021; Vijayalakshmi *et al.*, 2023). This neutrality underscores the need for experiential, practice-oriented learning approaches to foster informed attitudes.

Table 3: Statement-wise attitude of students towards cleanliness.

Response category	Mean score range
Disagree	0.59-1.04
Neutral	1.05-1.50
Agree	1.51-1.96

Attitude measured using a 3-point Likert scale (Agree, neutral, disagree); Reverse scoring applied for negative statements.

Table 4: Distribution of respondents according to extent of participation in cleanliness activities.

Level of participation	UG (n=229)	PG (n=81)	Total (n=310)
Low	37 (16.15)	10 (12.34)	47 (15.16)
Medium	131 (57.20)	49 (60.49)	180 (58.06)
High	61 (26.63)	22 (27.16)	83 (26.77)
Total	229 (100)	81 (100)	310 (100)

Mean participation score = 25.22; SD = 5.42.

Extent of participation in cleanliness activities

The distribution of respondents by participation level (Table 4) suggests that most students demonstrated a medium level of participation, as reflected in the overall mean participation score. It suggests that students are generally willing to engage in cleanliness activities, particularly when opportunities are structured, but sustained or intensive involvement remains limited.

The relatively smaller proportion of students with low participation indicates that disengagement is not widespread. In contrast, the presence of a high-participation group highlights the potential of peer-led initiatives. Comparable participation patterns have been reported in earlier studies, where student involvement in cleanliness drives was found to be moderate and largely event-based (Pandey *et al.*, 2019; Nanda and Sharma, 2021). These findings suggest that institutional support and regular engagement are crucial for sustaining participation.

Activity-wise participation in cleanliness practices

Activity-wise participation patterns (Table 5) reveal that students were most actively involved in organized, routine cleanliness activities on campus, such as planning, scheduling and maintaining the cleanliness of academic and residential spaces. It reflects the effectiveness of collective and institutionally supported efforts, as also observed in earlier studies on student participation in cleanliness campaigns (Patil and Malpathak, 2018; Raj and Bhattacharya, 2021). Postgraduate students showed greater involvement in waste management and Swachh Bharat-related activities, possibly due to higher levels of responsibility and leadership. In contrast, undergraduate students showed stronger engagement in visible, hands-on activities. Lower participation in activities requiring sustained behavioral change, such as plastic avoidance and advocacy-based actions, indicates that while students respond well to immediate tasks, long-term behavioral commitment remains a challenge. This pattern aligns with national assessments that highlight uneven behavioral adoption despite widespread acceptance of cleanliness initiatives (Ministry of Housing and Urban Affairs, 2020).

Relationship between socio-personal characteristics and attitude and participation

The correlation analysis (Table 6) indicates that multiple socio-personal factors influence students' attitudes and participation in cleanliness, though most relationships are

Table 5: Activity-wise participation of students in cleanliness practices (n = 310).

Activity domain	UG (MPS)	Rank	PG (MPS)	Rank
Planning and scheduling cleanliness activities	High	1	High	1
Maintaining cleanliness of campus spaces	High	2	High	2
Waste management and segregation	Moderate	3	High	3
Awareness programmes and cleanliness drives	High	4	High	3/4
Toilet and washroom maintenance	Moderate-high	5	Moderate	5
Plastic avoidance and advocacy activities	Low	6	Low	6

MPS= Mean per cent score; Ranks are assigned based on relative participation levels.

Table 6: Correlation between socio-personal characteristics and attitude and participation (n = 310).

Variable	Attitude (r)	Participation (r)
Age	-0.243**	-0.207**
Gender	-0.179**	0.029
Caste	0.180**	0.136*
Family type	-0.309**	-0.297**
Residence	-0.230**	-0.105
Occupation	-0.218**	-0.108
Income	0.115*	-0.003
Faculty	-0.505**	-0.475**
Future plan	0.012	0.049

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

weak to moderate. Age showed a negative association with both attitude and participation, suggesting that younger students may be more receptive to cleanliness messaging. Caste showed a positive association, suggesting that social background influences perceptions of cleanliness.

Family type and faculty affiliation were negatively associated with both attitude and participation, with faculty emerging as one of the stronger influencing factors. It highlights the role of academic orientation and curricular exposure in shaping cleanliness behavior, as also reported by Sharma and Gupta (2019). Gender showed a weak association with attitude and no meaningful relationship with participation, indicating broadly similar involvement across genders. Given the weak strength of most correlations, these findings should be interpreted cautiously, emphasizing trends rather than causal inference.

The study's findings closely align with the Sustainable Development Goals, particularly SDG 6 (Clean Water and Sanitation) and SDG 3 (Good Health and Well-being), which emphasize hygiene, sanitation and preventive health practices. The observed gap between favorable attitudes and moderate participation reflects the global challenge of translating awareness into sustained sanitation behavior (UNDP, 2020; WHO, 2018). The study also contributes to SDG 4 (Quality Education) by highlighting the role of educational institutions in promoting cleanliness-related values through experiential learning and to SDG 11 (Sustainable Cities and Communities) by emphasizing youth participation in maintaining clean and healthy environments.

Taken together, the findings not only describe students' attitudes and participation levels but also highlight a persistent attitude-participation gap in cleanliness behavior within a university setting. While favorable perceptions toward cleanliness are well established, participation remains selective and largely dependent on institutional structure and organized activities. This gap suggests that students' cleanliness behavior is shaped more by contextual and institutional factors than by individual attitudes alone, a pattern consistent with broader behavioral and sustainability research (Pandey *et al.*, 2019; Nanda and Sharma, 2021).

From an institutional perspective, agricultural universities serve as important behavioral laboratories where cleanliness practices can be cultivated and reinforced through curriculum integration, field-based learning and community engagement. Given students' predominantly rural and agrarian background, cleanliness behaviors learned on campus may extend beyond the university into surrounding rural communities. Thus, the present findings provide baseline evidence that can inform the design, monitoring and evaluation of cleanliness and sanitation interventions within higher educational institutions.

The findings suggest that cleanliness initiatives in educational institutions should move beyond awareness-oriented campaigns and focus on sustained, practice-based engagement. Policies at the institutional level may integrate cleanliness and sanitation into academic curricula, campus governance mechanisms and student leadership programs. Agricultural universities, in particular, can serve as nodal institutions for promoting cleanliness practices aligned with national initiatives such as the Swachh Bharat Mission and global commitments under SDG 6 and SDG 4. Future research may extend the scope of the present study by adopting longitudinal or intervention-based designs to examine how students' attitudes translate into sustained cleanliness behavior over time. Comparative studies across different categories of universities, or the inclusion of additional stakeholders such as teaching, non-teaching and campus service staff, would provide a more comprehensive understanding of institutional cleanliness ecosystems. Such extensions would also support broader sustainability assessments aligned with SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production).

CONCLUSION

The present study examined the attitudes and participation of undergraduate and postgraduate students toward cleanliness activities at Sardarkrushinagar Dantiwada Agricultural University, Gujarat, revealing that although students hold generally favorable attitudes toward sanitation, their participation remains moderate, indicating an attitude-participation gap. While respondents strongly recognized cleanliness as a public health and social responsibility and rejected social stigma associated with sanitation work, neutrality toward technical and regulatory aspects pointed to gaps in practical knowledge. Participation was higher in organized campus activities but limited in sustained behavioral practices such as plastic avoidance and advocacy. Socio-personal factors showed weak to moderate influence, with faculty affiliation and family type emerging as relatively important, suggesting the greater role of institutional context. Overall, the findings highlight the need for continuous, experiential and institution-driven interventions to translate positive attitudes into sustained practices, positioning students as potential change agents and contributing to broader goals such as United Nations Sustainable Development Goals (SDGs 6, 3 and 4).

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Disclaimers

The views and conclusions expressed in this article are solely those of the authors and do not necessarily reflect the views of their affiliated institutions. The authors are responsible for the accuracy of the information presented, but disclaim any liability for direct or indirect consequences arising from the use of the content.

Informed consent

All participants were informed of the study's purpose and procedures, as well as the voluntary nature of their participation. Confidentiality was assured and participants were informed of their right to withdraw from the study at any stage without any consequences. Only those who provided informed consent were included in the study.

Conflict of interest

The authors declare that there is no conflict of interest associated with this publication. No external funding or

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